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GRADUATE STUDIES

WE HEREBY RECOMMEND THAT THE THESIS SUBMITTED

BY STEVEN C.M. HASSTEDT

ENTITLED THE ILLINOIS WILDLIFE ENHANCEMENT BONUS PROGRAM:
ANALYSIS OF THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES AND
ILLINOIS QUAIL UNLIMITED CONSERVATION PROGRAM

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DEGREE OF MASTER OF SCIENCE

WITH A MAJOR IN ENVIRONMENTAL SCIENCES, ENVIRONMENTAL BIOLOGY

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We certify that, in this thesis, all research involving human subjects complies with the Policies and Procedures for Research Involving Human Subjects, Southern Illinois University Edwardsville; Edwardsville, Illinois.

For theses involving animals or biohazardous material, including recombinant DNA, we certify that the research complies with the applicable policies and procedures established by the Animal Care Committee on the University Committee Biosafety, respectively, of Southern Illinois University Edwardsville; Edwardsville, Illinois.

ABSTRACT

THE ILLINOIS WILDLIFE ENHANCEMENT BONUS PROGRAM: ANALYSIS OF THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES AND ILLINOIS QUAIL UNLIMITED CONSERVATION PROGRAM

by

STEVEN C.M. HASSTEDT, CAPT, USAF

Chairperson: Assistant Professor Paul E. Brunkow

In 1998 the Illinois Department of Natural Resources (IDNR), Division of Wildlife Resources, Habitat Stamp Fund in conjunction with Illinois Quail Unlimited (QU) initiated the Illinois Wildlife Enhancement Bonus Program (IWEBP). Financial incentives are available to property owners for implementation of wildlife friendly practices on land enrolled in the United States Department of Agriculture's (USDA) Conservation Reserve Program (CRP) and non-CRP acres are eligible under a fescue (*Festuca arundinaceae*) conversion initiative. Mail surveys following the Total Design Method (Salant and Dillman 1994) were used to gauge both land owner / operator and Natural Resources Conservation Service (NRCS) professional's perceptions regarding IWEBP efficacy in improving wildlife habitat, administrative costs of IWEBP, and characteristics of enrolled participants. Proportional response histograms and higher order analyses revealed IWEBP participants place a high intrinsic value on both habitat and the presence of wildlife on their land, and the financial incentive is most important to offset the high cost of re-establishing native grasses and forbs. NRCS personnel generally believe, compared to other state conservation programs, IWEBP provides similar or better habitat benefits for wildlife in general and is particularly beneficial to bobwhite quail (*Colinus virginianus*). Land owners and NRCS personnel alike appreciate the relative simplicity of IWEBP enrollment procedures, but further education efforts regarding the singular importance of habitat (Brennan 1991, Jenkins 2000) in improving upland wildlife populations could further the success of this program.

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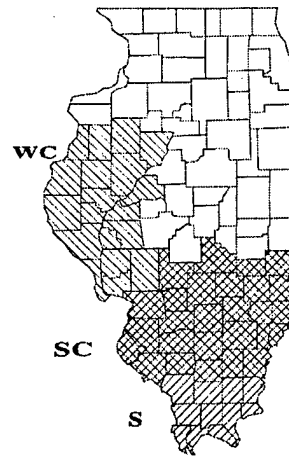
CHAPTER I

INTRODUCTION

Farming Practice Changes

The Northern bobwhite quail (*Colinus virginianus*) is a common upland game bird found throughout Illinois, but predominantly through the central and southern portion of the state. The Illinois Department of Natural Resources (IDNR) delineates three bobwhite management zones in the state.

Figure 1:
Illinois Bobwhite Management Zones
WC: West-central Region
SC: South-central Region
S: South Region
(David 1999, 2000, 2001)

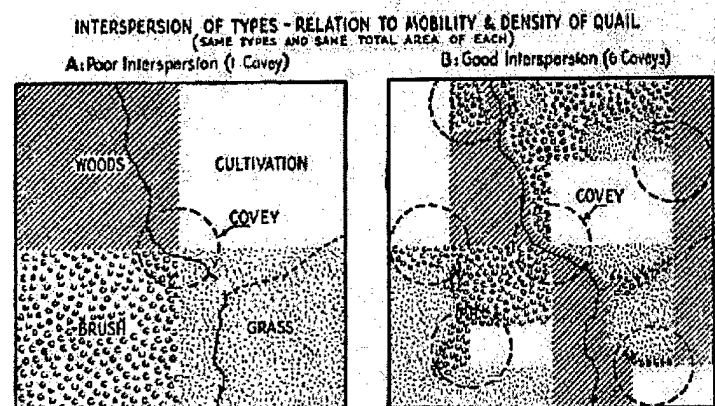


In the last 50 years, bobwhite populations throughout their broad national range have decreased dramatically and this decline is especially evident in Illinois. Through the 1950s bobwhites thrived because their habitat needs were ideally met by a patchwork of small farms producing diverse crops. In pre-settlement times, viable populations of bobwhites were originally restricted to the southeastern and eastern United States. As the great westward movement began, early settlers plowed virgin prairie and cleared timbered land; farms began to spread west and north across the Great Plains and the mixture of early agriculture and cleared land created exceptional bobwhite habitat. Many of these land use changes caused the decline of prairie species but, "...at the same time agriculture has

admitted quail to the prairies... and given quail a universal distribution in the adjoining woodland regions where in virgin times quail were either localized or absent" (Leopold 1933). These beautiful and social birds have been our gain and, aside from their aesthetic and economic benefits, monitoring bobwhite population trends can provide a direct correlation to ever-changing land use regimes. Since the 1950s, land use changes have rapidly eclipsed habitat for all types of wildlife, and bobwhites, to their detriment, are an excellent harbinger of this change. Tremendous amounts of habitat have been and continue to be lost due to urban sprawl but the largest decline of habitat in the Midwest is attributable to the advent of modern farming practices (Brennan 1991).

Agricultural and silvicultural practices have fundamentally altered habitat structure at both macro- and microhabitat levels (Roseberry and Sudkamp 1998). Traditional farm practices conducive to wildlife habitat were conducted on a small scale and involved a large diversity of crops, fallowing fields, contour farming, etc. Current farm practices eliminate wildlife habitat and include removal of fence rows and hedge rows in favor of massive, monocultural fields (more efficiently harvested by larger machinery), clean farming practices of increased mowing, application of herbicides and pesticides, and use of genetically engineered seed (e.g., 'Round-Up' ready).

Figure 2: Interspersion of Resource Types and Habitat (Leopold 1933). Indicative of habitat from clean farming (left) vs. traditional farming (right)



These modern agricultural practices lead to a post harvest landscape devoid of winter cover or food supply, spring nesting habitat, sheltering travel corridors or, after fall discing, any type of habitat whatsoever. Approximately 85% of Illinois is farmland (Jenkins 2000) and the implementation of these practices on a landscape scale have led to the dubious moniker of the Prairie State's winter scape as a black desert.

This study focuses on wildlife habitat management initiatives encouraged by the Illinois Wildlife Enhancement Bonus Program (IWEBP). The IWEBP is a cooperative public and private conservation program sponsored by the Illinois Department of Natural Resources and Illinois Quail Unlimited. The efficacy of this program comes primarily through augmenting and providing additional wildlife friendly habitat practices on acreage already enrolled in the United States Department of Agriculture's Conservation Reserve Program (CRP). Prior to examining the IWEBP, one must first have a basic background in the biology of its targeted beneficiary and the history of habitat management through the CRP.

Bobwhite natural history

The Northern bobwhite quail is a small plump bird averaging ten inches long and weighing six to seven ounces (David and Cole 2000). Their short wings provide explosive and rapid flight over short distances and the approximately 2 ½ inch legs of adults are well suited for walking or running. Bobwhites require a diverse and patchy habitat of predominantly open landscapes with substantial woody edges for shelter (Ellis et. al. 1969, Roseberry and Sudkamp 1998, Burger et. al. 1990). Hens and cocks both have mottled, rusty

brown backs and wings and short beaks. Mature cocks have whitish chest feathers with brown and black speckles and a white stripe extending across their forehead to the base of their neck, contrasting with dark feathers on top of their head and behind their eye to provide a distinctive “masked” appearance. Hens have a buff or rusty colored throat and forehead stripe and beige colored chest feathers with less noticeable brown and black speckling (Sternberg 1995).

In early spring paired cocks and hens build shallow grass covered nests and the hen usually lays one egg per day with eventual clutches of 12-15 small white eggs. Nesting begins as early as April with peak activity between June 1 and July 15. Approximately 60% of nests are destroyed, predated or abandoned due to disturbance, but if the clutch is not disturbed, 90% of the eggs usually hatch after 21-23 days (David and Cole 2000). Bobwhites are able to take advantage of an incredibly diverse amount of food sources; one food-habit study revealed over 600 different types of plant material in their diet (Sternberg 1995). For the first few weeks of a chick’s life its primary diet consists of high protein insects. Through summer and into early fall insects compose approximately 30% of the diet for both adults and chicks but in winter their diet is 100% vegetative (David and Cole 2000). Adult bobwhites are able to exploit a wide variety of vegetative food sources, so it is the newly hatched chick’s primarily insect diet that highlights a key brood habitat need for early successional vegetation. Bobwhite chicks have very short legs and in order to successfully pursue and capture insects necessary for rapid growth and development, the chicks need to be able to put their feet on the ground while being shielded by overhead cover. Good brood habitat consists of a mixture of annual grasses, legumes and seed-producing weedy forbs providing overhead cover and succulent leaves to attract insects. Non-native cool season

grasses like tall fescue (*Festuca arundinaceae*) form a tightly woven mat after a few growing seasons – too dense for either nesting or brood cover (David et.al. 1995).

Adults and chicks depart the nest area as soon as possible after hatching and both adults assist in raising the brood. If the hen is killed, cocks will often raise the brood on their own. If both adults are killed, it's possible that another hen or cock might adopt the chicks. Bobwhite chicks are able to fly in two to three weeks and reach maturity approximately four months after hatching. In late summer to early fall broods and unmated birds repeatedly join together and then split up forming aggregate groups called coveys. These social birds continue this fall shuffling process until coveys of approximately 10-20 birds form and settle into a headquarters area, though smaller coveys are common in areas with degraded habitat (David and Cole 2000). In fall and winter bobwhites may travel together while foraging and diurnal movements of undisturbed coveys are usually only between 400 to 800 meters. Bobwhites form circular roosts at night, usually in relatively low, sparse vegetation (Ellis et. al. 1969) with their tails touching and heads facing outwards to conserve body heat (Sternberg 1995).

Habitat Management

It's widely accepted that good quail habitat consists of four integral cover types: cropfields, grass land, woodland, and brush (Schroeder 1985, Roseberry and Sudkamp 1998). John Roseberry, recently retired senior wildlife scientist at Southern Illinois University Carbondale's Cooperative Wildlife Research Laboratory, stressed the importance of considering habitat management of these four cover types at three nested levels: landscape, farm, and field (Jenkins 2000). Landscape level encompasses many square miles around a property and takes into account land-use patterns of the surrounding area in order to set

attainable management goals. Farm focus can be anywhere from 40 to several hundred acres and the goal of management at this level is to provide all four components of cropfields, grasses, woods, and brush. Field level management should focus on ensuring that transitions between components consist of soft, gradual edges as opposed to hard, abrupt edge transitions. Many types of wildlife, game and non-game, express an extreme fondness and proclivity towards inhabiting edges. This tendency is termed edge-effect and has been studied for generations (Leopold 1933, Ellis et. al. 1969, Schroeder 1985, Jenkins 2000) yet the challenge to provide soft edges is ever more difficult to combat in the current culture of clean farming (Roseberry and Sudkamp 1998). In today's climate of clean farming, massive monocultural crop fields, and ever expanding suburban sprawl, wildlife habitat continues to decline (Mankin and Warner 1999) the best opportunity to preserve and protect both habitat and soil and water resources rests in the hands of federal (Farmer et. al. 1988), state, and privately funded conservation initiatives (Roseberry and David 1994).

The Conservation Reserve Program (CRP)

The Food Security Act of 1985 authorized a Conservation Reserve Program (CRP), administered by the United States Department of Agriculture's (USDA) Farm Service Agency (FSA) to provide payments to farmers for planting permanent cover (principally grasses) on highly erodible cropland (Farmer et. al. 1988, Hays and Farmer 1990). The initial and primary goal of the CRP was to improve soil and water quality, but the immediate and obvious potential to exponentially improve and preserve wildlife habitat was readily apparent and embraced by conservation professionals nationwide. It is often difficult for those outside of the agricultural and conservation communities to view land enrolled in the CRP as anything other than idle. In truth, enrolling land under the CRP pays the landowner

not to idle the land and do nothing, but to become a steward of our national natural resources, including wildlife. "Today, the CRP is safeguarding millions of acres of American topsoil from erosion, improving air quality, increasing wildlife habitat, and protecting ground and surface water by reducing water runoff and sedimentation. The program is a major component of the Secretary of Agriculture's Buffer Initiative, an effort to plant vegetation along streams, rivers, and other bodies of water throughout the country" (USDA, FSA 1999). Even though the CRP is a fantastic program for preserving and improving wildlife habitat nationwide, in a stand-alone state it is not a panacea for habitat concerns.

As of 1998, the CRP contains provisions for the implementation of 25 different Conservation Practices (CPs), including tree planting (CP3), grass waterways (CP8), and vegetative filter strips (CP13) to living snow fences (CP17) and wetland restoration (CP23) to name a few examples. The multiple practices available are designed to provide regional and situational flexibility in determining what practice to initiate. In Illinois 87% of CRP acres are enrolled in CP1, establishment of permanent introduced grasses and legumes (David et al. 1995) so this practice is of particular interest for upland wildlife habitat. Closely related to CP1 for benefit to bobwhite habitat are CP2 (Establishment of permanent native grasses), and CP4 (Permanent wildlife habitat). Previous studies (Farmer et al. 1988; Burger et al. 1990) firmly established that in addition to the retired crop base and the particular CP employed in a field, the age or year of CP establishment are also major factors in determining CRP suitability as bobwhite habitat. Fields less than three years old provide the annual weeds, bare ground, and overstory cover components that characterize quality brood habitat. However, after three years, CRP fields become too densely matted or littered at ground level and cease to be useful as brood habitat areas (Burger et al. 1990). While

aging CRP fields do provide better nesting habitat, bobwhites tend to nest primarily along transition zones or edges (Leopold 1933, Roseberry and Sudkamp 1998). Local assessments and a habitat management plan (i.e., strip discing or burning in select years) are required to maintain optimum bobwhite habitat conditions.

Bobwhite habitat can be broken down into four essential components: protective cover (e.g., woods, shrubs), nesting areas (grass), brood rearing areas (e.g., brush, early successional weeds), and food supply (e.g., crops, native forbs/grass seed) (Schroeder 1985, David and Cole 2000, Fig. 2). In 1994, Roseberry et al. conducted an analysis ascertaining the ability of the CRP to enhance bobwhite habitat. Their modeling study suggests that the CRP potential to improve bobwhite habitat depends on, "... (1) the amount of CRP land present, (2) its suitability for bobwhite use, (3) the suitability of replaced and remaining cropland for bobwhite use, (4) the juxtaposition of CRP fields with other habitat components, and (5) the composition and quality of existing bobwhite habitat, in particular, which components were limiting (e.g., winter food, protective cover, nesting/brood rearing areas)." In order to make responsible management decisions, knowledge regarding habitat needs of bobwhites and the capabilities of the CRP must be validated against actual bobwhite population trends.

Analyzing the population of bobwhites presents a particular challenge since the objects of study are mobile and intentionally evasive. Indeed, for most animal species avoiding the attention and notice of other animals (including humans) is key to their survival and success. While it is virtually impossible to determine exact bobwhite population estimates, annual sampling with the same temporal, spatial, and methodological framework can provide excellent comparisons regarding their relative abundance and distribution (Miller et al. 2000). Studies of bobwhite indices at local, regional, and statewide scales have not

revealed strong correlations between bobwhite populations and acreage of land enrolled in the CRP (Roseberry and David 1994), due primarily to the distribution and habitat suitability of CRP acreages. However, these studies have provided astute and well founded management recommendations to help CRP property achieve its potential for providing excellent bobwhite habitat (Farmer *et. al.* 1988, Roseberry and David 1994). CRP habitat enhancement recommendations included: (1) less mowing, especially in mid-summer (nesting time), (2) more early successional, weedy vegetation via strip discing and controlled burns, (3) more CP2 (establishment of permanent native grasses) and CP4 (permanent wildlife habitat) and less CP1 (permanent introduced grasses and legumes), and (4) more provision of food via food plots or Korean lespedeza (*Lespedeza stipulacea*) seedings (Roseberry and David 1994). These recommendations and the importance of national, state, and local involvement to promote wildlife interests provide insight into the genesis of the IWEBP.

The Illinois Wildlife Enhancement Bonus Program (IWEBP)

In 1998 the Illinois Department of Natural Resources (IDNR), Division of Wildlife Resources, Habitat Stamp Fund initiated the Illinois Wildlife Enhancement Bonus Program (IWEBP) with a grant of \$144,000 to the Illinois State Quail Unlimited Chapter for distribution to local chapters providing ten percent in matching funds. In cooperation with the USDA Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS), these funds are used to provide incentive payments to land owners participating in the CRP for completing wildlife friendly habitat practices on new or re-enrolled CRP property. Land owners submit a one page application to their county NRCS / FSA office for

project approval. Upon completion of their project, land owners or their local NRCS or DNR office notify Quail Unlimited and a check for completion of the approved IWEBP practice is issued. Land owners not enrolled in the CRP can also participate and receive payments for eliminating tall fescue.

The IWEBP offers payments for four types of wildlife enhancement practices. In the first (Continuous CRP), a one time \$50 per acre payment (maximum of \$500 / land owner / year) is authorized for planting native grasses and forbs in CRP filter strips, contour grass strips, grassed waterways, or riparian buffers. The second (Light Strip Discing), provides a \$15 per acre payment (maximum of \$375 / land owner / year) for land owners following NRCS guidelines. Third (Native Grass & Forb Plantings on CRP Acres), provides a \$25 per acre payment (maximum of \$1000 / land owner / year) to assist in planting native grasses or forbs on existing or newly enrolled CRP acreage under the conservation practices of CP10 (vegetative cover, grass – already established), CP2 (establishment of permanent native grasses), or CP4 (permanent wildlife habitat). The fourth practice (Fescue Conversion on Non-CRP Acres), provides a \$50 per acre payment (maximum of \$1500 / land owner / year) for converting fescue to wildlife friendly cover. A district wildlife habitat biologist must approve all projects in the fescue conversion category.

The IWEBP is a groundbreaking program because it provides a cooperative and additive conservation effort between the federal CRP, Illinois DNR Habitat Stamp initiatives, and contributions of local Quail Unlimited Chapters. This program recognizes the essential part that non-profit conservation organizations like Quail Unlimited must play in habitat preservation by focusing on voluntary, incentive based initiatives at the local community level. The CRP is a conservation cornerstone but it is widely understood that states must have the ability to tailor and augment the program to meet their particular regional or local

needs (Urich *et. al.* 1984). The cost sharing / matching funds provided by Quail Unlimited help stretch the available state conservation dollars and the end result is improved and expanded wildlife habitat while conserving our soil and water resources.

The overall objective of this study is to provide information to the Illinois DNR, Division of Wildlife Resources and to Illinois Quail Unlimited on how to potentially improve or expand wildlife habitat preservation under the IWEBP. In order to provide relevant information this study examines the overall approval and attitudes of (1) land owner / operator participants, and (2) NRCS county level conservation professionals regarding the efficacy of the IWEBP in improving wildlife and quail habitat.

CHAPTER II

METHODS

Data were collected from June to August 2001 through mail surveys sent to landowners / operators participating in the IWEBP and Natural Resources Conservation Service (NRCS) offices. Two different surveys were developed, one for land owners / operators and one for county level NRCS offices. Cover letters, surveys (appendices A-D), and postage paid business reply envelopes were enclosed in official #10 size envelopes addressed from Southern Illinois University Edwardsville, Department of Biological Sciences, and mailed first class. The surveys were printed on legal size paper and folded into booklet format with cover letters printed on official university letterhead. The postage paid return envelopes were # 9 size, Southern Illinois University Edwardsville, Biological Sciences Department business reply envelopes. Business reply envelopes were coded with our university project account code instead of stamps to avoid expenditure on un-returned surveys. A barcode on the business reply envelope triggered a charge against the project account each time a returned survey was processed via the U.S. Postal Service.

Surveys were mailed to all IWEBP participants in the QU database since inception in 1998. Names and addresses of all participants are maintained by QU for payment approval upon implementation of approved habitat management practices. Participant names and addresses were forwarded for use in this study by the QU regional Agriculture and Wildlife Services office and included the entire population of the 335 current program participants. The NRCS population of 31 county offices was selected through sorting land owner / operator addresses by zip code into counties with the assumption that land enrolled in IWEBP corresponded to the land owner's actual county of residence. All surveys were

numbered sequentially to maintain an accurate respondent mailing list. Upon receipt of a completed survey, the survey number was referenced to exclude that particular respondent from future mailings. Two weeks after the initial mailing, reminder post cards (appendix E) were sent to all non-responding program participants requesting their assistance by completing and returning their survey. A second mailing of surveys went out to all non-responding program participants and NRCS offices three weeks after the reminder postcards. The original timeline called for the second mailing of surveys to come approximately two weeks after the estimated receipt of reminder postcards however, an extra week was required due to a logistical delay while additional business reply envelopes were printed. Receipt of completed surveys and data collection continued for approximately one month after mailing of the second survey. In all, the entire timeframe for mailing initial surveys, post card reminders, second surveys to non-respondents, and data collection occupied 2.5 months.

The decision to use a mail survey involved consideration of a number of factors regarding the distribution, composition, and accessibility of respondent populations. Since the IWEBP is a relatively new conservation initiative it was important to survey both of the distinct populations involved: 1) the land owners / operators, and 2) the NRCS professionals assisting with the design and implementation of program practices. Due to extensive geographic distribution of each respondent population, pragmatic survey methods were limited to either mail or telephone surveys. Informal polling of attendees at an IDNR and IL QU sponsored quail management workshop on September 16, 2000 yielded an extremely strong and occasionally expletive-laden distaste for telephone surveys. This telephone survey aversion and discussion with IDNR, QU, and SIUE faculty encouraged development of mail surveys as the preferred data collection method.

Survey Design

Surveys were designed under the principle that people are willing to respond to attractive questionnaires; with a well designed survey, response error and measurement error tend to be minimized (Axford *et. al.* 1997, Salant and Dillman 1994). The booklet survey format and mailing timeline coincides closely with professional recommendations (Warner 1983, Salant and Dillman 1994; Craig A. Miller, Human Dimensions Specialist, Center for Wildlife Ecology, Illinois Natural History Survey-INHS). Examples of current and previous INHS surveys including Waterfowl Hunter Surveys, Hunter Harvest Surveys, and Trapper Surveys were also used as models (Craig A. Miller, Human Dimensions Specialist, Center for Wildlife Ecology, Illinois Natural History Survey-INHS). Discussion with INHS personnel also provided some insight on pitfalls to avoid by studying examples of poorly designed surveys and survey questions.

The front and rear covers of both land owner / operator and NRCS surveys are the same layout and designed to convey an uncluttered, professional impression to the respondent (appendices B and D). Names and logos of sponsors of the study (SIUE, IL DNR, and QU) were included to reinforce the legitimacy of the survey. Multiple versions of both questionnaires were reviewed and critiqued by SIUE faculty advisors and personnel from Quail Unlimited and IL DNR, Division of Wildlife Resources. Once surveys were approved, a pilot study was undertaken to gain perspective and suggestions from both land owners and conservation professionals regarding the question types, wording, and overall presentation of the survey.

The pilot study included approximately 20 participants from two different county level NRCS / FSA offices, IL DNR personnel at a State Forest location, and randomly selected farmers patronizing the Shiloh Valley Equipment Company. At each county level

office and the State Forest location, personnel recorded comments, questions, and suggestions while responding to both the land owner / operator and NRCS surveys. The randomly selected farmers reviewed only the land owner / operator surveys and provided direct verbal comments. This polling was done in person so that all concerns and suggestions could be immediately annotated. Pilot study results were used to perform minor but important wording modifications on both surveys. The majority of questions in both surveys were close-ended, ordered response types allowing respondents to provide a graduated response to a single concept (eg., not important, slightly important, moderately important, very important, extremely important). Close-ended, unordered response type questions were also used where responses are provided but these responses do not fall on a graduated continuum (eg., reduce / control predators, alter modern farming practices, reduce hunting).

Land Owner / Operator Survey

Land owners / operators were the initial focus of this study. These participants are implementing IWEBP conservation initiatives to improve wildlife habitat conditions on their property and are observing effects of their efforts on a daily basis. These individuals are on the front line of habitat preservation so it is absolutely vital to ascertain their observations and perceptions of the success of the IWEBP. Since the land owner / operator questionnaire contained four discrete sections, visual presentation of the questions was considered in order to reduce respondent burden throughout the survey. The survey should be easy to complete, relatively brief, have clear, unambiguous questions, and not make the respondent feel uncomfortable with either condescension or erudition (Salant and Dillman 1994). Keeping this guidance in mind, sections were clearly delineated and questions within each section

were designed to stand on their own. For example, if a respondent decided to skip ahead in the survey he/she could easily answer each question even if they had not read the directions.

Section 1: Observations of wildlife

The first section was designed to measure perceptions and beliefs of respondents regarding wildlife and quail populations both on their property and within the State of Illinois. These perceptions could then be quantified and compared against actual wildlife population trends measured by the IL DNR through a variety of survey tools including annual call count surveys (Cole 2000, David 1999, 2000, 2001) and hunter harvest reports (Miller et al. 2000).

All respondents have either implemented or are beginning to implement conservation practices espoused by the IWEBP, and this first section also contained a question measuring the perceived effect of IWEBP practices on wildlife populations on the respondent's property. A follow-up question asked respondents to select the one practice out of three options that would most help quail populations improve. The three options were: 1) reduce/control predators, 2) alter modern farming practices to preserve / produce more habitat, and 3) reduce/eliminate hunting. This question was designed to gauge the beliefs of IWEBP participants regarding these options, all three of which are controversial depending on your audience, and each with highly different effects regarding the improvement of bobwhite populations. The first six questions in this section were close-ended with ordered choices while the last question was close-ended with unordered response choices. Both types of questions are designed to make the questions easy to answer and easy to enter into a database for future analysis. The results of this section will assist in developing education

and expectation strategies for current and future participants in both the IWEBP and other conservation programs.

Section 2: Program participation and farming practices

The second section of the land owner / operator survey focuses on three distinct areas of interest. The first area (questions one through six) gains information regarding personal reasons for participation in the IWEBP. The second area (questions seven through nine) gauges both the frequency of professional support (i.e., from NRCS or IDNR personnel) and perceptions regarding the quality of the support provided. The third area (questions 10 through 15) records respondent perceptions regarding the ability of IWEBP practices to provide habitat, how these practices affect daily farming operations, and how current farming practices affect wildlife populations.

The first five questions are formatted with close-ended ordered responses and ask the respondent to rank each reason for participating on a scale from "Not Important" to "Extremely Important". The sixth question is left open as "Other, please specify" in order to allow respondents the opportunity to signify the importance of potential factors that were overlooked while designing the survey. Questions seven through nine tracked the means by which respondents learned of the IWEBP, the frequency of contact with NRCS or IDNR personnel and their perception of the quality of support provided. Questions eight through fifteen are all close-ended ordered response questions encouraging quick selection of responses in an endeavor to keep respondent effort level low and interest level high. Analysis of this section will provide IWEBP sponsors with insight into respondent reasons for participation and to provide information on how to improve administration and marketing of the current program.

Section 3: Hunting and conservation

Responsible, ethical hunters have always understood and practiced conservation but hunting and conservation were legally linked through the Federal Aid in Wildlife Restoration Act (commonly called the Pittman-Robertson Act) passed on September 2, 1937 (Digest of Federal Resource Laws 2000). Via this Act, funds accrued through Federal excise taxes on all sporting arms, ammunition, bows, arrows, and fishing tackle are appropriated to the Secretary of the Interior and "...apportioned to the States on a formula basis for paying up to 75 percent of the cost of approved projects. Project activities include acquisition and improvement of wildlife habitat, introduction of wildlife into suitable habitat, research into wildlife problems, surveys and inventories of wildlife problems, acquisition and development of access facilities for public use, and hunter education programs" (Federal Aid in Wildlife Restoration Act 1937). Section three of this survey was designed to first measure: 1) hunting frequency (behavior) of respondents and 2) the importance value they place on implementing conservation practices.

Questions one and two are close-ended ordered response questions designed to quantify the hunting behavior of the respondent and their immediate family. Questions three through five also measure the behavior of the respondent, but with regard to their reading and viewing habits of hunting, fishing, and conservation magazines and television shows. Questions six through eleven are close-ended ordered response questions to track respondent beliefs by allowing them to select the importance value of specific wildlife, conservation, and socio-political factors. Analysis of this section will allow IWEBP sponsors to better target education and outreach initiatives for both the general public and our public representatives in order to improve conservation efforts.

Section 4: Property and participant demographics

The demographics section is designed to profile the characteristics of the IWEBP participant and the characteristics of the enrolled property. A comprehensive understanding of both property and participant demographics will provide IWEBP sponsors and other conservation professionals (i.e., NRCS and FSA personnel) with information to increase conservation participation across demographic sectors. The demographic section was intentionally placed at the end of the survey and questions that might be construed as particularly sensitive (i.e., age, marital status, income level) were the very last on the survey. These questions were intentionally placed at the end of the questionnaire to downplay the importance of this section and avoid discouraging or angering the respondent – thereby preventing them from completing the survey (Salant and Dillman 1994). The intent of providing a series of easy to answer, visually appealing questions in the first three sections of the survey was to build the confidence of the respondent and to facilitate earnest, considered responses and a fully completed survey.

Natural Resources Conservation Service (NRCS) Survey

The overall goal of this study is to provide information for potential improvements to the IWEBP and other conservation / wildlife habitat programs in Illinois. These improvements may be manifest in a number of ways, including modified program implementation practices, variation in education, marketing and outreach strategies, or increased monetary support from the Illinois Wildlife Habitat Stamp Fund. The NRCS

survey was designed to gauge professional opinions of NRCS personnel at county offices concerning various facets of the IWEBP. These personnel, along with county level FSA and local IDNR wildlife personnel, provide the technical expertise, guidance, and approval for implementation of IWEBP practices and payment to land owners upon completion of the practice.

The NRCS survey contains ten questions with no division into particular subgroups. The first four questions have close-ended, ordered responses to ascertain administrative cost, perceived difficulty level for participants to enroll, and habitat benefit of the IWEBP relative to other State conservation programs. The fifth question is an open-ended, ordered response question requesting proportional break down of the size of participating properties within the respondent's county. Questions six through nine regard IWEBP benefits to wildlife and bobwhites based on both NRCS observations and NRCS personnel perceptions of land owner beliefs. The final close-ended, ordered response question asks the respondent to estimate the percentage of IWEBP participants for whom the primary motivation for program participation was monetary incentive as opposed to provision of wildlife habitat. Survey responses were then cross-referenced with land owner / operator survey responses to determine the level of concordance between perceptions of NRCS professionals and land owner participants.

Database Management

One would think the most challenging portion of conducting a large mail survey would be either survey design or the actual mailing, reminder, second mailing and completed survey collection portions of the endeavor. In reality though, the work is just beginning after completed surveys are returned. In order to conduct an orderly, methodical survey and

provide accurate results for analysis, multiple databases were used, each one maintained in Microsoft Excel. The mailing list database contains IWEBP participant and county NRCS office addresses with their corresponding unique survey number. The column next to the survey number received an "X" upon receipt of the completed survey and that person / office was then removed from future mailing lists. The primary response database contains unsorted respondent information for statistical analysis. Additional databases for each section in the land owner / operator survey and the NRCS survey were sorted by individual question to create the proportional response histograms. Database creation and management will vary with each investigator or study subject, but a common thread of constancy should bind data management and analysis together. When the primary individual performing analysis also enters and manages the data, a high level of data familiarity is gained. In cases where inferences are required, this familiarity is particularly valuable both for recognizing reporting errors and for interpreting trends or anomalies.

Graphing and Analysis

Histograms showing relative frequency of each response for each question were used in the first stage of analysis. For each histogram, confirming that the number of sorted responses equaled the total number of responses received and that the relative frequencies of each response totaled 100% provided an internal check on completeness of data entry. These histograms also provided a way to describe the general responses of land owners and NRCS personnel.

Additional response analysis was conducted using SYSTAT 7.0. Parametric and non-parametric correlations were conducted to gauge the relationship between responses of selected questions. Detecting the existence of expected correlations between responses to

selected questions is one way to check the authenticity of responses. If respondents were answering at random, or were not careful in selecting responses, then such correlations would not exist. Quantifying correlations in responses between selected questions may also yield more information than was directly reported in each question. Pearson's product-moment of correlation and significance test was used to ascertain statistical significance of correlations between response comparisons (Sokal and Rohlf 1995). Spearman's correlation of rank coefficient was also used to quantify relationships between these same responses. Spearman's test is used when there is no simple mathematical relationship between the two coefficients of rank correlation. When $n > 10$, Spearman's correlation of rank coefficient provides a more accurate reflection of the true magnitude of the relationship than Pearson's coefficient (Sokal and Rohlf 1995).

The Mann-Whitney U-test (Sokal and Rohlf 1995) was employed to determine whether self-reported characteristics of respondents who answer a particular question one way vary from those who responded differently to that same question. It is hoped that these comparisons will prove valuable to conservation professionals, but the number of comparisons performed on data in this study is by necessity limited. Particular relationships of interest for improving the Wildlife Enhancement Bonus Program were selected for correlation analysis (see Results, Correlations and Higher Order Analyses); databases are available upon request for further testing and analysis.

Additional Comments

On the last page of both the land owner and NRCS surveys space was provided for the respondent to voice additional comments or concerns regarding the IWEBP. Comments from the surveys are used as nuance support of the analysis and augment the results from

particular survey sections or questions. Additionally, if multiple entries of an unspecified concern or benefit of the program arise, this information will also assist in the overall interpretation of results and improvement of the program as a whole.

CHAPTER III

RESULTS AND DISCUSSION

Survey Returns

Of 335 land owner / operator surveys mailed, 236 were returned for a 70% response rate. Of the 31 NRCS surveys mailed, 28 were returned for a 90% response rate. Records were not kept regarding survey return date, but out of those who responded, an estimated 75% of both land owners and NRCS offices returned completed surveys within 2 weeks of the initial mailing. Approximately 10% more returned completed surveys after receiving the reminder post card and the remaining 15% returned completed questionnaires after receiving a second copy of the survey. Response rates of 70% or better are not atypical when working with select interest groups (i.e., Illinois Hunter Harvest Survey, Miller *et. al.* 2000). Mail survey response rates will vary widely by subject material but returns of over 50% are generally considered exceptional (Salant and Dillman 1994).

Land Owner / Operator Survey

Section 1: Observations of wildlife

Many land owners perceived declining bobwhite populations with 48% of respondents indicating that there are either far fewer or fewer bobwhites on their property than 10 years ago (Fig. 1.1). The fact that 27% of respondents felt they had more quail and another 3% had many more quail (Fig. 1.1) reflects the different perceptions of land owners and could either be related to IWEBP practices or to prior conservation practices implemented by the land owner. Note that while 48% of respondents observed far fewer or fewer quail on their property, nearly 73% observed far fewer or fewer quail in Illinois (Fig.

1.2). This difference is expected since respondents represent a select group of land owners already taking action to improve and promote habitat on their property.

Land owners also reported improvements with respect to both the quality of habitat (Fig. 1.3) and the amount of wildlife (Fig. 1.4) on their property since implementing approved IWEBP initiatives. Surprisingly, while 48% of participants felt there were more or many more quail on their property since enrolling in the IWEBP, 41% observed no change and 6% actually reported fewer quail (Fig. 1.5). No space was provided in the questionnaire for additional comments at this point (Section 1, Question 5: S1Q5) but a number of respondents felt it necessary to qualify their response by writing explanations. Multiple land owners reporting fewer bobwhites wrote in representative quotes such as, “Too early, just put in seed this spring” and “First year seeding not yet established”. These unsolicited remarks led to the perception that many participants did not observe positive changes because they had just begun implementing their habitat improvement practices. This perception is supported since 70% of respondents indicated changes in the amount of wildlife on their property were due to IWEBP practices (Fig. 1.6).

Perhaps the most divisive split in respondents regarded their thoughts on which one factor would most help quail populations increase. While 59% of respondents chose altering modern farming practices, 38% selected reduce/control predators as the best single factor to increase the number of quail (Fig. 1.7). Land owner comments reported “exploding” and “substantial increases” in predator populations and repeatedly cited hawks, raccoons, and coyotes as examples. These observations of increased predator densities are borne out by multiple surveys conducted by IDNR (Allen 2001).

Spring spotlight surveys, archery deer hunter surveys, and requests for nuisance raccoon removals suggest a 24% increase in the Illinois raccoon population over the last ten

years (Allen 2001). While populations of some predators are increasing, predator impact on bobwhites is also exacerbated by severely diminished habitat (Haaland 2001). Decreased fur prices, reductions in state and federal funding, and ballot initiative restrictions on predator management have contributed to increased predator densities with USDA statistics reporting that in 2000, calves lost to coyotes in the Mid-West were up 41% to 87,000 from 61,700 in 1995 (Hastings 2001).

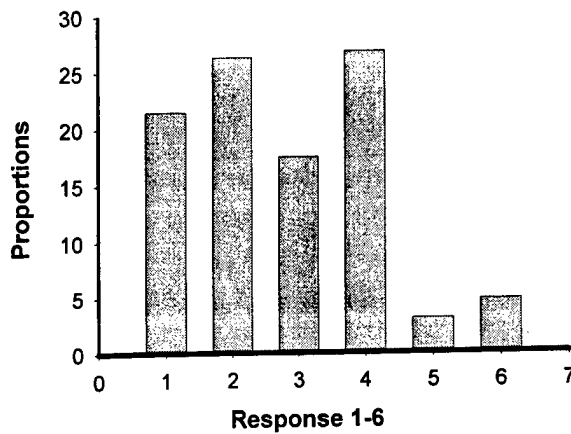
Though there is substantial evidence warranting further studies regarding the impact of expanding predator populations on both game and non-game wildlife, habitat preservation and creation must remain the focal point of conservation programs. As one land owner put it, "Habitat is key to all wildlife and we are losing habitat every day due to expansion of modern farming..." The composite results of this section reveal participating land owners feel both the quality of habitat is improving and the amount of wildlife they observe on their property is increasing due to participation in the IWEBP. In the words of one participating land owner, "I see great improvement in wildlife numbers on the property!"

Property Owner Survey Results

Section 1: Observations of wildlife

Figures 1.1 and 1.2 Responses:
 1=far fewer quail, 2=fewer quail,
 3=same as before, 4=more quail,
 5=many more quail, 6=not answered

**Figure 1.1: S1Q1 (Section 1 Question 1),
 "Compared to 10 yrs ago, today
 on your property there are..."**



**Figure 1.2: S1Q2, "Compared to 10 yrs
 ago in Illinois today there are..."**

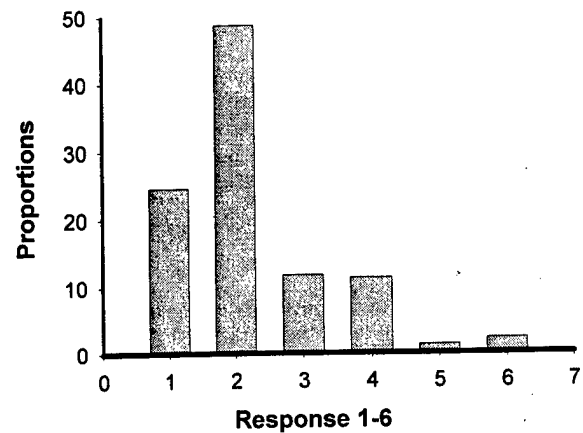
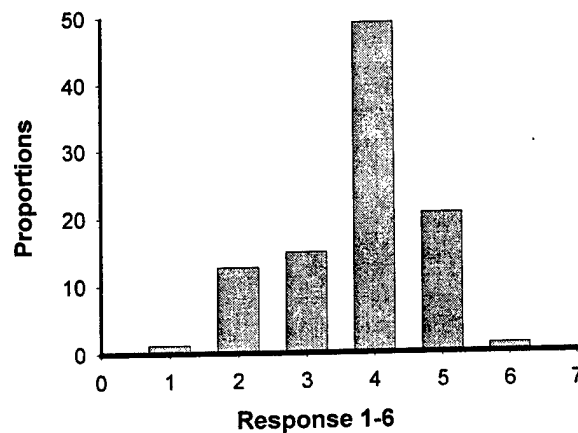


Figure 1.3 Responses:
 1=much worse, 2=worse,
 3=same as before, 4=better,
 5=much better, 6=not answered

**Figure 1.3: S1Q3, "Compared to before WEBP,
 quality of habitat on your property is..."**



Property Owner Survey Results
Section 1: Observations of wildlife (continued)

Figure 1.4: S1Q4, "...rate the amount of wildlife on property since beginning WEBP" (1=much less, 2=less, 3=same, 4=more, 5=much more, 6=not answered)

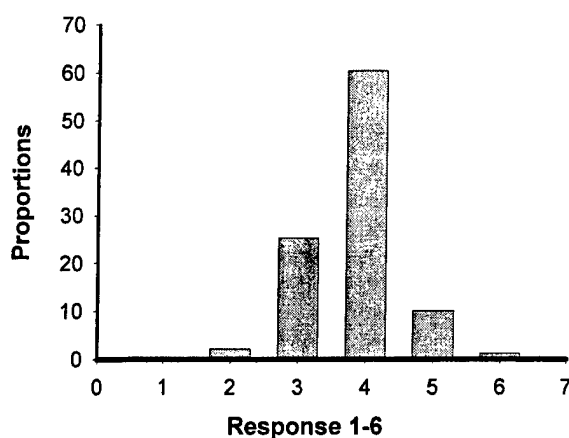


Figure 1.5: S1Q5, "...rate the number of quail on property since beginning WEBP" (1=far fewer, 2=fewer, 3=same, 4=more, 5=many more, 6=not answered)

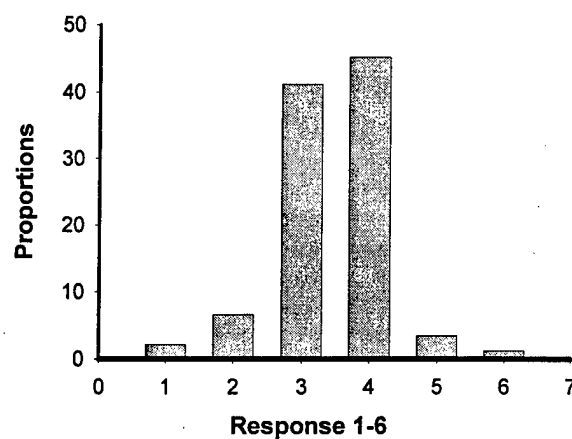


Figure 1.6: S1Q6, "Is amount of wildlife on your property related to WEBP?" (1=yes, 2=no, 3=no change, 4=not answered)

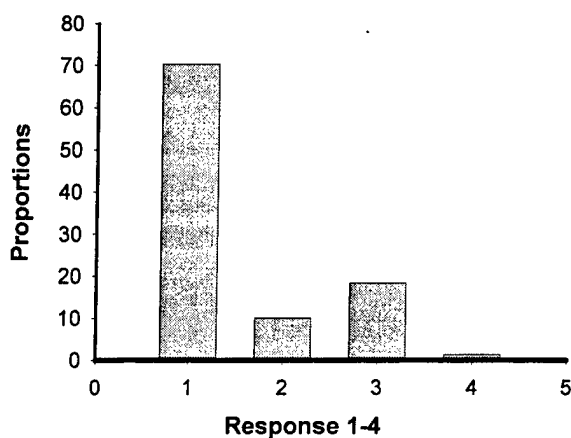
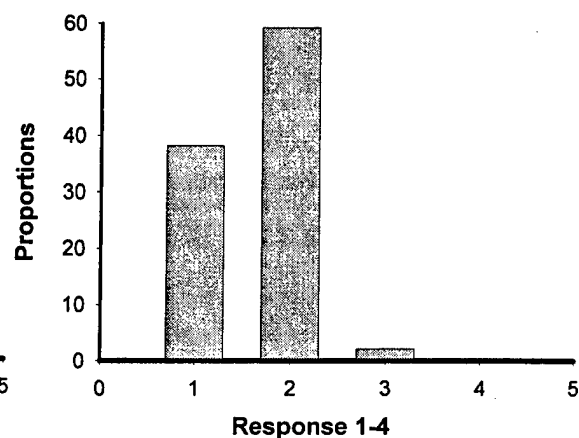


Figure 1.7: S1Q7, "What one factor would most help quail pops. increase?" (1=reduce/control predators, 2=alter modern farming practices, 3=reduce hunting, 4=not answered)



Section 2: Program participation and farming practices

This survey section first seeks indications of land owners' motivations for participating in IWEBP. As expected due to the fact that respondents are voluntarily implementing habitat improvement practices on their property, responses here indicate a high intrinsic value placed on the presence of wildlife and an ethic of responsibility to the land. Almost 90% of land owners consider improving wildlife viewing opportunities to be from moderately to extremely important (Fig. 2.1), and over 75% of respondents consider improved soil and water quality very or extremely important (Fig. 2.2) with regard to their implementation of IWEBP practices.

Responses concerning the importance of improved hunting opportunities were more mixed, with over 50% of respondents rating it as very or extremely important (Fig. 2.3). However, almost 30% of land owners reported that hunting opportunities were not or only slightly important, suggesting that for this contingent, promoting wildlife habitat or preserving soil and water quality are their primary focus. An understanding that Quail Unlimited and other non-profit sporting and conservation organizations are vital to the preservation and restoration of wildlife habitat seems to have reached these land owners and hopefully that knowledge will continue to spread. Stewardship of the land pervades these respondents with over 70% indicating they're enrolled in IWEBP to fulfill their sense of responsibility and pride (Fig. 2.4). No trend could be discerned regarding the importance of monetary incentive as a reason for participation (Fig. 2.5) but the importance of a monetary incentive is further examined in section Section 3.

Property Owner Survey Results
Section 2: Program participation and farming practices

Responses for Section 2, Questions 2.1 - 2.5:
"Rate the following reasons for participation in WEBP"

1=not important, 2=slightly important
 3=mod important, 4=very important
 5=extremely important, 6=not answered

Figure 2.1: S2Q1, "Improved wildlife viewing opportunities"

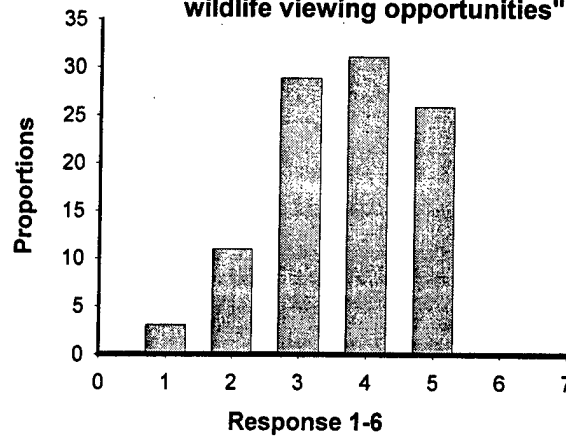


Figure 2.2: S2Q2, "Improved soil and water quality"

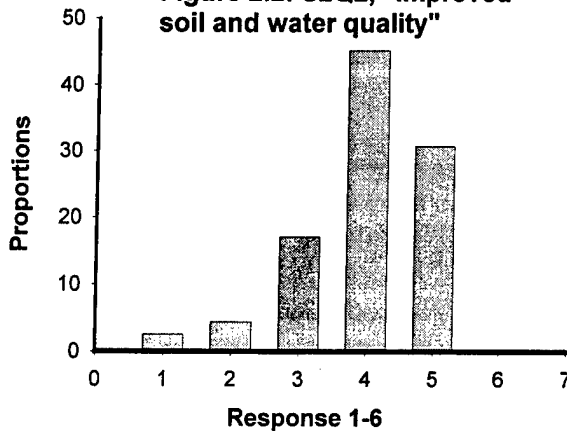


Figure 2.3: S2Q3, "Improved hunting opportunities"

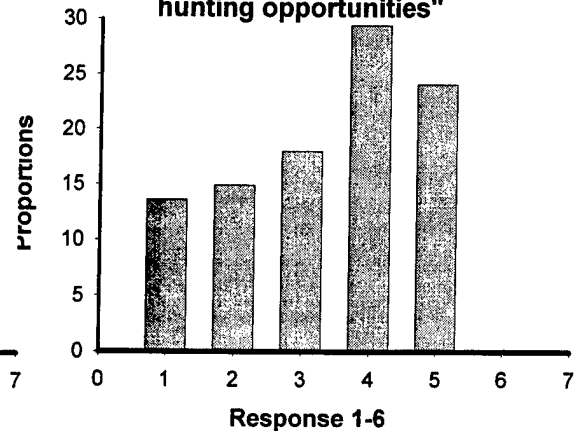


Figure 2.4: S2Q4, "Sense of responsibility / pride"

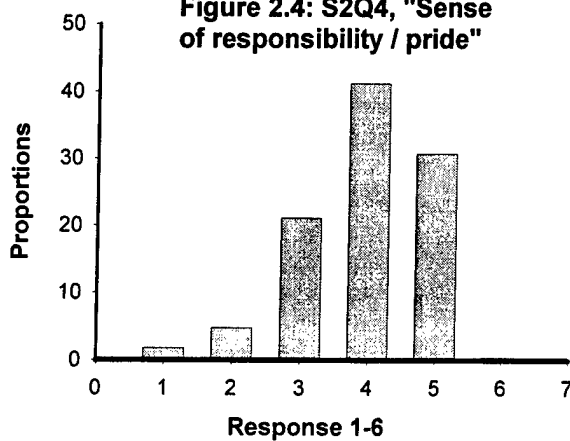
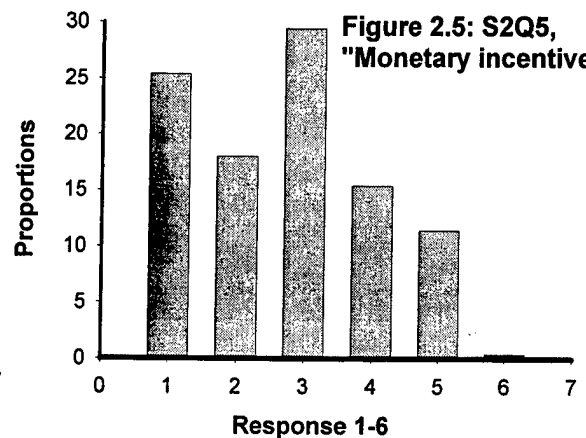


Figure 2.5: S2Q5, "Monetary incentive"



This section next evaluated land owner experiences with IWEBP and contacts with conservation professionals assisting in the implementation of habitat improvement initiatives. Note that S2Q7 (Appendix B) requested land owners to indicate all means by which they learned of the IWEBP. Since multiple responses were possible for each land owner, Figure 2.6 represents the frequency of particular responses so a summation of more than 100% occurs when considering all responses. By far the most common mode of learning about the IWEBP was through speaking with NRCS or FSA representatives as 74% of respondents learned of the program through this channel. Personal contact appears key in promotion of IWEBP with 36% of land owners learning of the program through IDNR personnel and another 21% through friends or relatives. The fact that only 18% of respondents are members of Quail Unlimited speaks well of the universality of this program.

Regarding service provided by conservation professionals (NRCS, FSA, or IDNR personnel) Figure 2.7 reveals a very high level of interaction. In the last two years, 25% of respondents met with conservation professionals four to six times, 14% seven to ten times, and 28% met more than ten times. These results indicate that land owners are very comfortable in contacting conservation professionals. Based on results indicated in Figure 2.8, land owner satisfaction with conservation professional support appears very positive with 85% of respondents rating service by NRCS, FSA, or IDNR personnel as either excellent or good. This high level of service is typified by remarks like, "Information provided by the NRCS officer was extremely valuable" and, "Our NRCS officer was very excited about this and also very knowledgeable and helpful."

The majority of respondents have been participating in IWEBP for two years and it appears that land owner enrollment of new participants has decreased for each successive year since program inception (Fig. 2.9). This apparent decline in enrollment might be

indicative of the need to expand IWEBP advertising to reach new segments of the populace. Positive land owner perception of the IWEBP is evident (Fig. 2.10) with 89% of respondents stating they plan to continue participating for the next six to ten years (the maximum option annotated on the survey) and a resounding 99% of respondents replied they would recommend the IWEBP to a friend or family member (Fig. 2.11).

The number and content of comments received in this section continues to build the overall profile of a respondent population well educated in conservation and dedicated to stewardship of the land. When asked why they would recommend the IWEBP to friends or family, a few land owners expressed an understanding of the need for habitat at the landscape level, "Illinois must have more habitat or it won't work" and "There is not enough habitat in the area to make a difference yet". Others felt a responsibility to help inform others, "I'm trying to set a model of native prairie and habitat for people to see and copy" and "To set an example and to educate the public".

Many land owners are participating due to a sense of responsibility to both past and future generations: "After my mother passed away I wanted to do this for her – she loved wildlife and spent hours watching the animals and birds... I have daughters and grandchildren who hunt and my oldest grandson now only hunts quail for ten minutes and has his limit!" Other land owners echo the conservation roots of hunting's heritage and wrote, "No down side, all positive – I want my kids to see my example and learn to hunt responsibly" and "Good wildlife populations are important to me not just for the hunting... but for the personal satisfaction of knowing I have made a difference."

Many land owners succinctly stated their reasons for participating in the IWEBP, "It's the right thing to do." Still others reflect a growing sense of frustration over the continued loss of habitat and traditional farms to corporate farms and modern farming

practices, “We don’t need more rowed, mowed, tilled, killed corn and bean desert!” While land owner motivations for IWEBP participation are varied, the responses rendered indicate a strong level of conviction towards preserving and restoring the natural environment.

In measuring the respondents’ perceptions regarding the IWEBP and modern farming practices, responses further confirm a high level of understanding regarding the wildlife benefits from conservation practices vs. the wildlife costs of modern farming practices. Over 80% of respondents rated IWEBP practices for improving wildlife habitat as either good or excellent (Fig. 2.12) but an unexpected split occurred regarding the impact of the IWEBP on farm productivity. Of responding land owners, 56% felt that implementation of wildlife friendly practices *does not* decrease farm productivity but 41% felt that it *does* decrease productivity (Fig. 2.13). One respondent who indicated participation in the IWEBP decreased farm productivity wrote the following unsolicited remark on this question, “No crops – all land in CRP...” It is speculative to assume that other respondents similarly regard land enrolled in conservation programs as lost productivity but it is a possibility. Further studies regarding this aspect could provide information on how to expand outreach and/or education associated with conservation programs and encourage increased participation. There is no split in land owner perceptions regarding the effect of modern farming practices on wildlife populations with 89% of respondents (Fig. 2.14) indicating that modern farming practices have caused wildlife populations to either decrease or greatly decrease.

Property Owner Survey Results

Section 2: Program participation and farming practices (continued)

Figure 2.6: S2Q7,
"How did you learn about the WEBP?"
 (1=member of QU, 2=USDA / NRCS personnel,
 3=IDNR personnel, 4=IDNR / QU brochure,
 5=organized event, 6=friend / relative, 7=other)

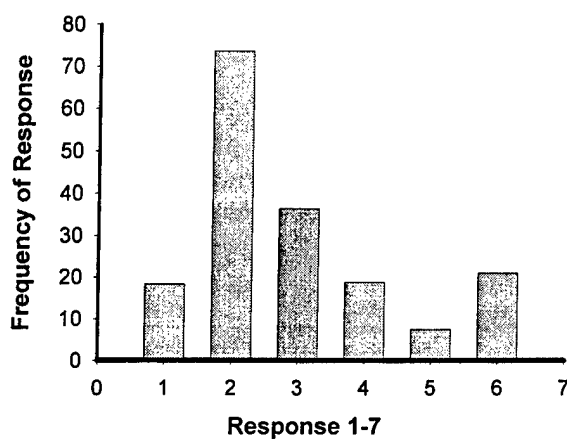


Figure 2.7: S2Q8,
"How much contact with NRCS, FSA,
or IDNR personnel in last two years?"
 (1=no contact, 2=1-3 times, 3=4-6 times,
 4=7-10 times, 5=more than 10 times)

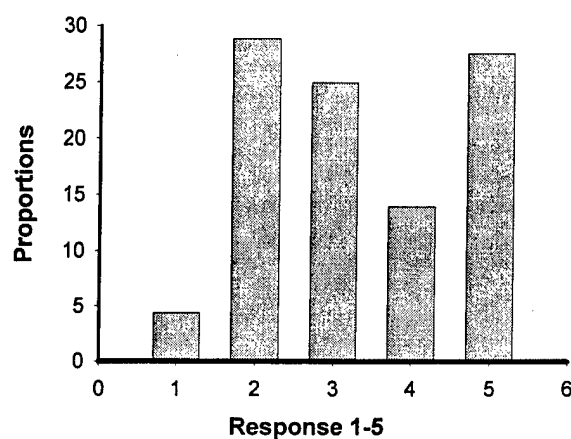


Figure 2.8: S2Q9,
"Rate service provided by NRCS,
FSA, or IDNR personnel" (1=poor,
 2=fair, 3=average, 4=good, 5=excellent,
 6=no contact / not answered)

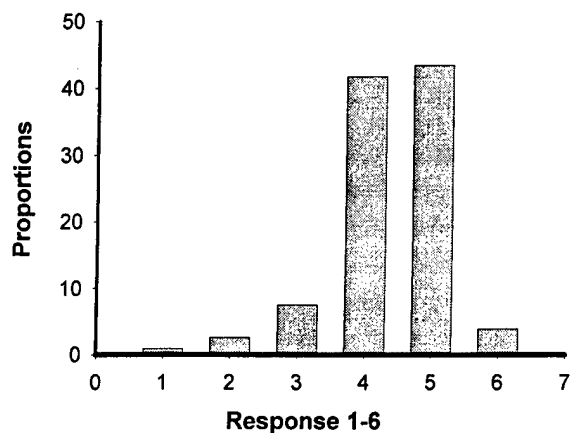
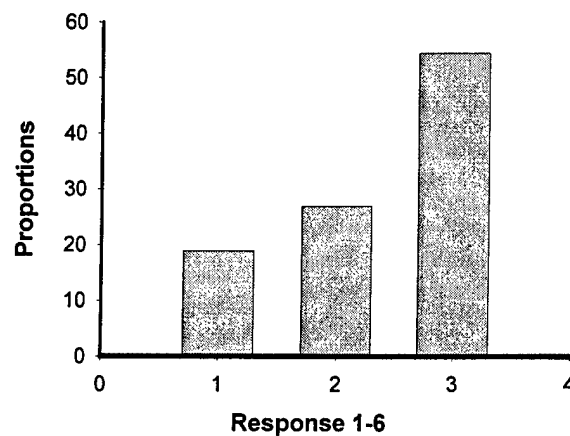


Figure 2.9: S2Q10,
"How long have you been
participating in the WEBP?"
 (1=less than 1 year / just starting,
 2=1 year, 3=2 years)



Property Owner Survey Results

Section 2: Program participation and farming practices (continued)

Figure 2.10: S2Q11,
"How long do you plan to
continue participating in WEBP?"
 (1=will not continue, 2=1-2 more yrs,
 3=3-5 more yrs, 4=6-10 more yrs,
 5=not answered)

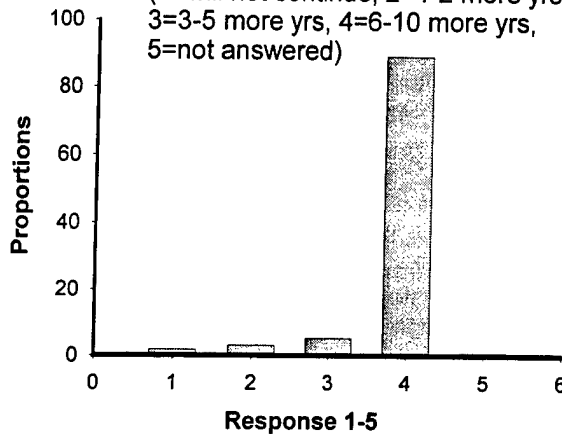


Figure 2.11: S2Q12,
"Would you recommend WEBP to
friend or family?" (1=yes, 2=no,
 3=not answered)

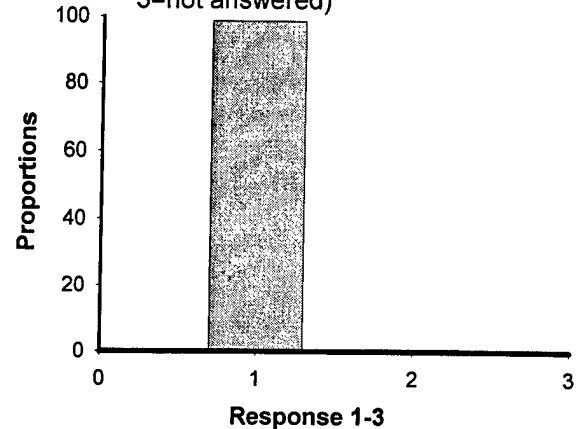


Figure 2.12: S2Q13,
"Rate effectiveness of WEBP
for improving habitat" (1=poor,
 2=fair, 3=average, 4=good,
 5=excellent, 6=not answered)

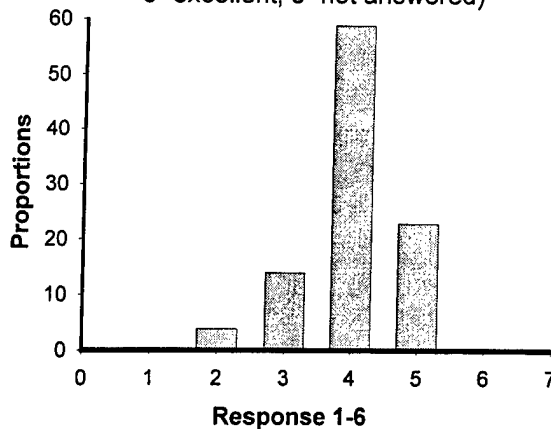


Figure 2.13: S2Q14,
"WEBP does or does not decrease
farm productivity" (1=does decrease
 productivity, 2=does not decrease
 productivity, 3=not answered)

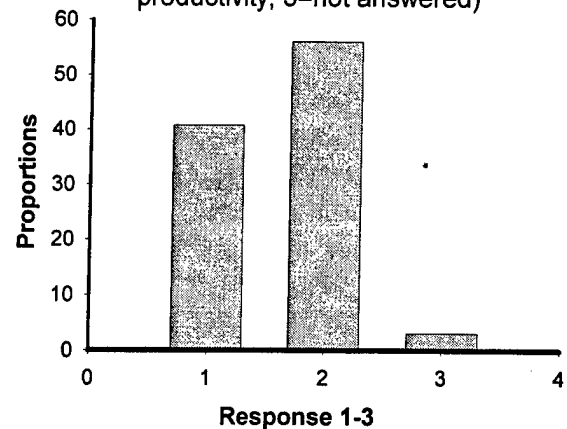
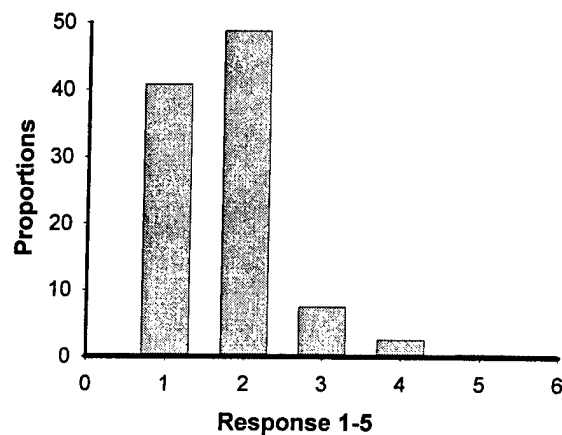


Figure 2.14: S2Q15,
"Modern farming practices
(monocultural crops, no fallowing,
increased pesticides, etc.)
have caused wildlife to..."
 (1=greatly decrease, 2=decrease,
 3=no change, 4=increase,
 5=greatly increase)



Section 3: Hunting and conservation

The distribution of responses from the first two questions in this section display a wide disparity between those *who hunt* on their property and those *who hunt quail* on their property. Figure 3.1 reveals that 22% of respondents do not hunt or have not hunted on their property in the last five years. The remaining 78% of respondents do hunt their property, and 39% hunt their property more than ten times per year (Fig. 3.1). When asked if the property owners or their family hunt quail on their land 53% replied they do not hunt quail at all and another 34% said they only hunt quail one to three times per year (Fig. 3.2). For land owners participating in a habitat program partly sponsored by Quail Unlimited, the difference between those *who hunt* (78%) and those *who hunt quail* (47%) on their property is striking. This divergence, along with numerous unsolicited comments regarding quail hunting, indicates that this would have been a good area for additional questions. “Too few birds on my 600 acres to justify hunting” and “Not enough birds to hunt” are indicative of the multiple, unsolicited written comments received on S3Q2 (Appendix B). Further questions ascertaining if the land owner previously hunted bobwhites and, if so, why did they stop hunting would clarify whether or not the cessation of hunting was related to decreased bobwhite populations or to some other factor.

Figures 3.3 – 3.5 represent the proportional responses of land owners regarding their reading and viewing habits of hunting, fishing, and conservation media. The high level of familiarity regarding conservation and wildlife habitat displayed in previous sections foreshadows the high proportion of respondents who actively read and/or watch media with a conservation message. Over 50% of respondents subscribe to hunting/fishing magazines, 40% to conservation publications (e.g., Outdoor Illinois), and 42% subscribe to publications from sporting conservation organizations (i.e., Quail Unlimited, Ducks Unlimited, Pheasants

Forever, etc.) (Fig. 3.3). Since respondents were advised to “check all that apply” with respect to S3Q3, a greater than 100% sum of proportional responses indicated in Figure 3.3 was expected. Couple results indicated in Figure 3.3 with nearly 72% of respondents watching hunting and/or fishing shows on television (Fig. 3.4) and conservation education is well documented for these survey respondents. One does not have to hunt or fish for long before gaining the indelible impression that quality habitat is essential for quality hunting/fishing.

Noting the nearly identical results concerning the importance of wildlife on their property and the importance of preserving habitat (Figs. 3.6 and 3.7), the intrinsic value of wildlife among respondents is again very prominent. More than 55% of respondents feel having wildlife on their property is extremely important while 33% feel it is very important (Fig. 3.6) as compared to 55% of respondents who feel providing habitat is extremely important with 34% indicating habitat is very important (Fig. 3.7). The close similarity in responses to these two questions indicates that respondents obviously make the correlation between good habitat and healthy wildlife populations.

Over 60% of respondents felt the monetary assistance provided by IWEBP was either very or extremely important for initiating habitat improvements (Fig. 3.8). Interestingly, distribution of responses to this question varies from the responses to S2Q5 (Fig. 2.5) in which respondents rated the importance of monetary incentives as a reason for participation. The importance of private conservation organizations and State / Federal conservation programs are well recognized as integral to habitat preservation with approximately 82% of all respondents rating both as either very important or extremely important (Figs. 3.9 and 3.10). When considering elected officials who support these programs, 75% of respondents

felt a candidate's support of conservation programs was very or extremely important when deciding for whom to vote (Fig. 3.11).

Property Owner Survey Results

Section 3: Hunting and conservation

Figure 3.1: S3Q1, "How many times have you or immediate family hunted your land in last 5 yrs?" (1=zero, 2=1-5 times, 3=more than 5 but less than 10 times per year, 4=more than 10 times per year)

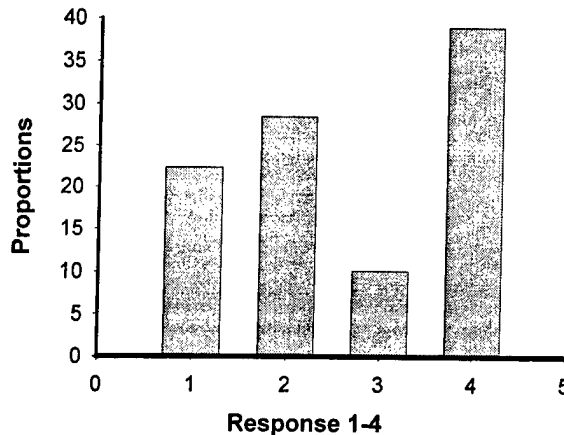


Figure 3.2: S3Q2, "On your property, how many times each season do you hunt Bobwhite quail?" (1=zero, 2=1-3 times per year, 3=4-6 times per year, 4=7-10 times per year, 5=more than 10 times per year)

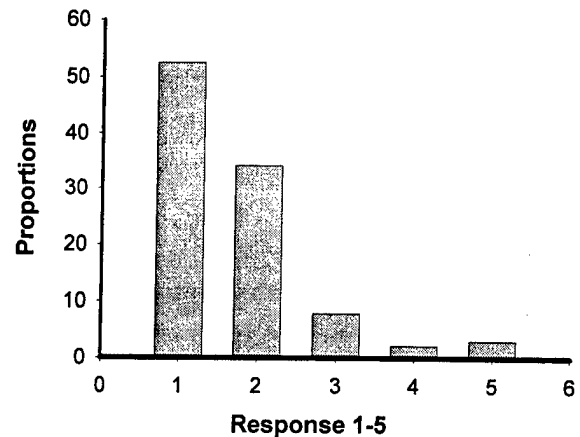


Figure 3.3: S3Q3, Check all that apply "I currently subscribe to:" (1=hunt/fish mags, 2=conservation mags, 3=sporting conservation mags (i.e., QU, DU), 4=none)

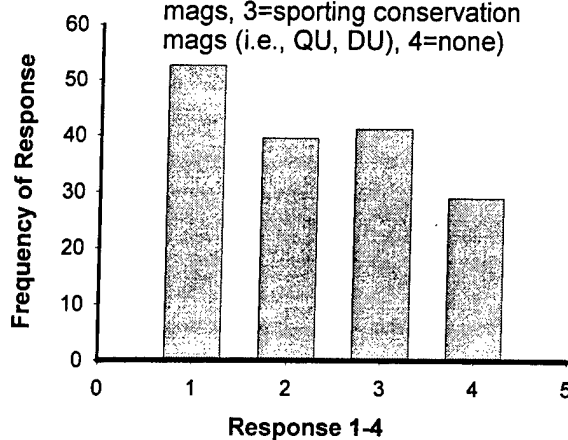


Figure 3.4: S3Q4, "Do you watch hunting or fishing shows on TV?" (1=yes, 2=no)

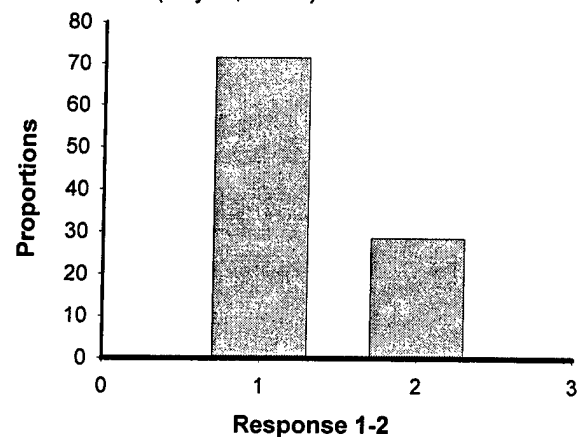
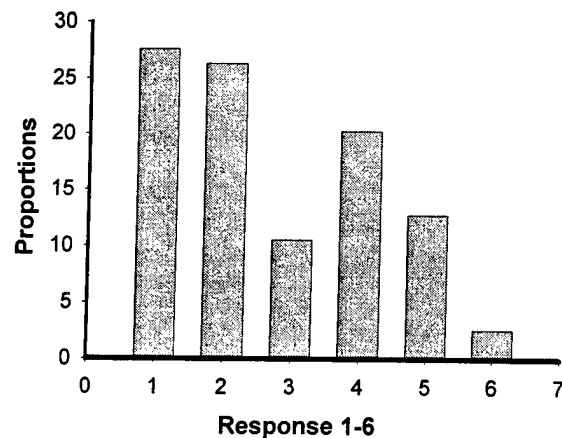
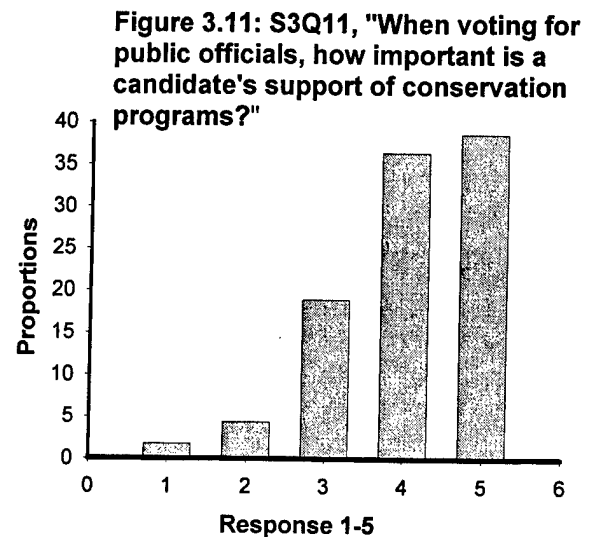
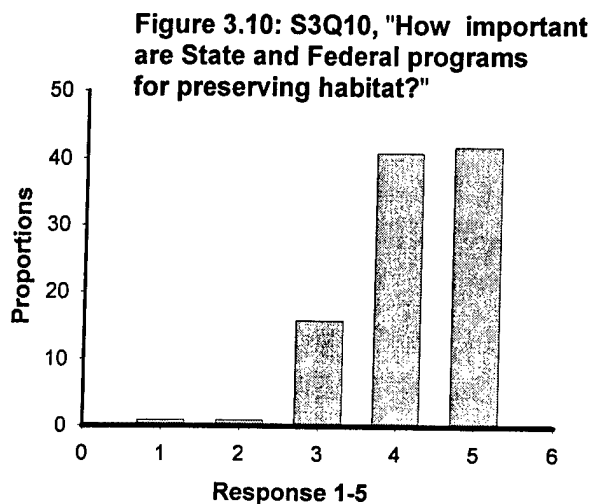
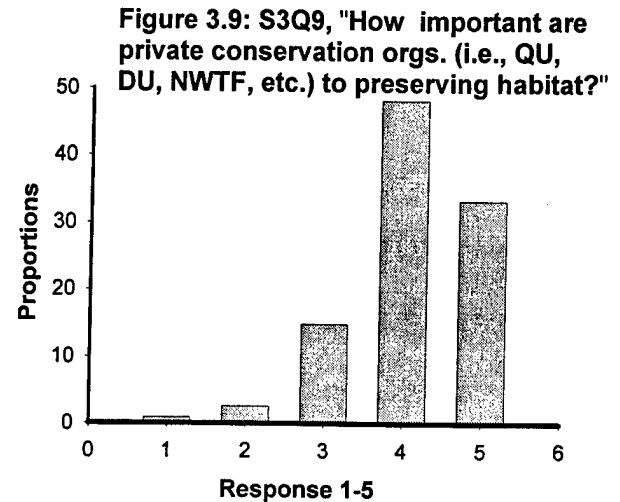
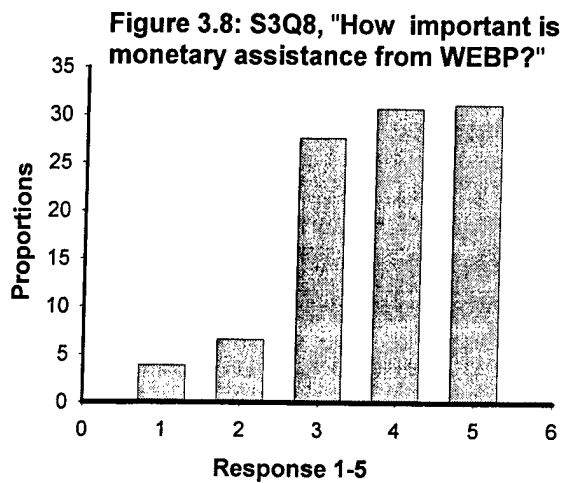
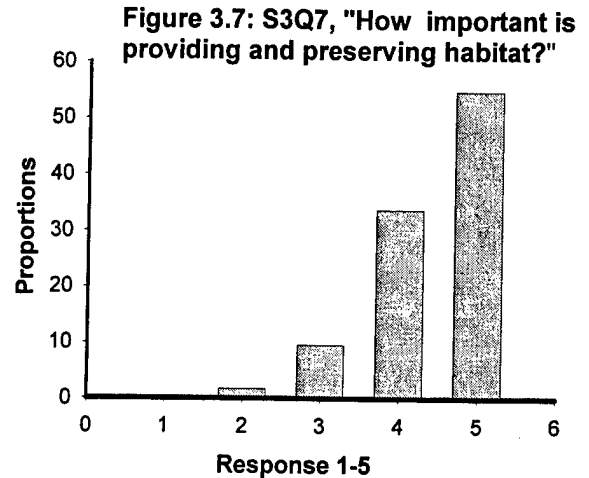
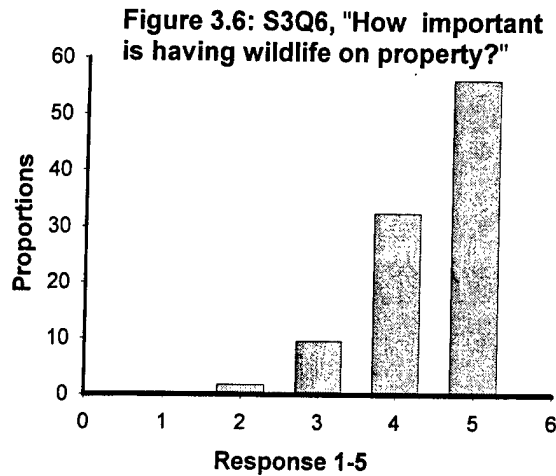


Figure 3.5: S3Q5, "If you watch hunting / fishing shows, how frequently do watch?" (1=occasionally, 2=once per month, 3=once per week, 4=more than once per week, 5=every day, 6=do not watch)



Property Owner Survey Results
Section 3: Hunting and conservation (continued)

Figures 3.6-3.11 "Rate the following based on your personal opinion":
 (1=Not Important, 2=Slightly Important, 3=Moderately Important, 4=Very Important, 5=Extremely Important)



Section 4: Property and participant demographics

Property and participant demographics can be very useful in tailoring future advertising and education efforts to broaden application of conservation programs like the IWEBP. Based on a pilot study conducted during the survey design process, properties of 160 acres or less were expected to comprise a substantial majority of enrolled acreages. This was not the case with 34% of properties at 161-500 acres, 18% at 501-1500 acres, and 4.4% at greater than 500 acres (Fig. 4.1). These results do not affect data interpretation, but the distribution was unexpected based on comments from pilot study cooperators. The vast majority of participants own their land (Fig. 4.2) and 70% of land owners purchased their property as opposed to inheriting the land (Fig. 4.3). It is important to note that in the survey (S4Q3) the choices for this question were only (1) purchased the property, or (2) inherited property / family farm. Since 15% of respondents felt compelled to write “inherited and purchased land” it is likely that these figures are not truly representative of the actual number of land owners who purchased vs. inherited their property. Whether a land owner purchased or inherited property is not expected to affect decisions about conservation but results were expected to illustrate potential demographic shifts in rural areas.

The results of Figure 4.4 are also probably not accurate in that many respondents wrote in “retired” in response to S4Q4. There were no options in the survey to designate retired status or previous career (e.g., retired farmer) so a large segment of the 70% who indicated farming is not their primary source of income might actually be retired farmers. This trend probably also influenced the results in following questions regarding off-farm employment. The 42% of respondents who indicated they are not employed in off-farm work or custom farming during the growing season (Fig. 4.5) are consistent with the 43%

who indicated that they spend zero hours per week (Fig. 4.6) employed in off-farm work or custom farming during the growing season.

As expected, a high proportion (87%) of respondents participates in at least one other conservation program in addition to IWEBP (Fig. 4.7). Approximately 50% of respondents took the time to list the names of other conservation programs in which they participate and of those, nearly all indicated they were enrolled in the CRP under a variety of conservation practices. Other relatively high frequency responses included Illinois' Acres for Wildlife program and the Wetlands Reserve Program (WRP).

Over 70% of participating land owners are willing to pay more than \$100 out of their own pocket to establish wildlife habitat (Fig. 4.8). While this is a good trend, monetary incentive programs remain vital to augment the ability of land owners to implement wildlife friendly practices. For example, seed mixtures containing both native warm season grasses and forbs can cost anywhere from \$70-300 per acre (Effingham NRCS). Land owners can receive discounted prices when ordering seed mixtures through their county NRCS office (i.e., bulk discounts) but it is essential to note that these per acre costs do not include planting and habitat management expenses. Monetary incentives appear to be an integral component of conservation programs for their ability to offset the high initial cost of native seed.

In spite of not providing a retired option in the survey, one can assume that substantial portions of participants in the IWEBP are retired. This argument gains strength when considering respondents have a mean age of 55 years old, 58% have been farming in Illinois for over 20 years (Fig. 4.9), and 44% are age 56 or up (Fig. 4.10). Respondents were 88% male (Fig. 4.11) and 83% married (Fig. 4.12). Since such a large proportion of respondents are married, retired or not, there are two potential incomes in the majority of respondent households. Considering two incomes in each married household, the

distribution of average gross *household* income towards the upper end makes sense (Fig. 4.13).

Property Owner Survey Results

Section 4: Property and participant demographics

Figure 4.1: S4Q1, "What is the total acreage of your property?" (1=less than 80 acres, 2=80-160 acres, 3=161-500 acres, 4=501-1500 acres, 5=more than 1500 acres, 6=not answered)

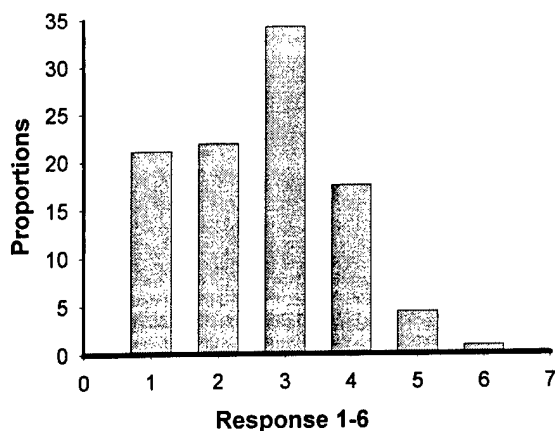


Figure 4.2: S4Q2, "Do you..." (1=own your property, 2=lease your property, 3=own and lease property, 4=not answered)

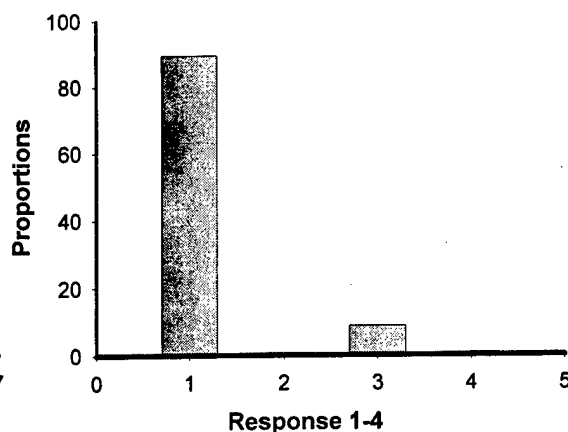


Figure 4.3: S4Q3, "If you own your land, did you..." (1=purchase the property, 2=inherit / family farm, 3=inherited and purchased property, 4=not answered)

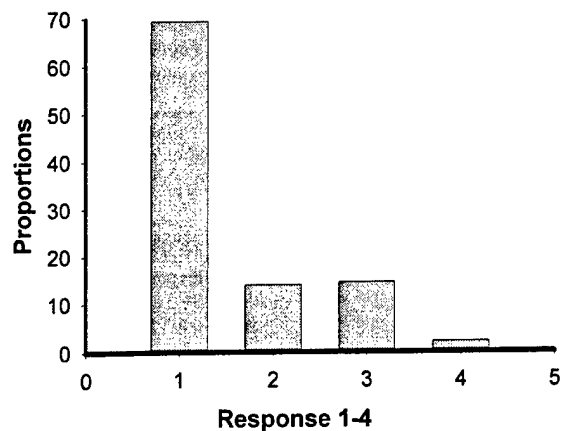
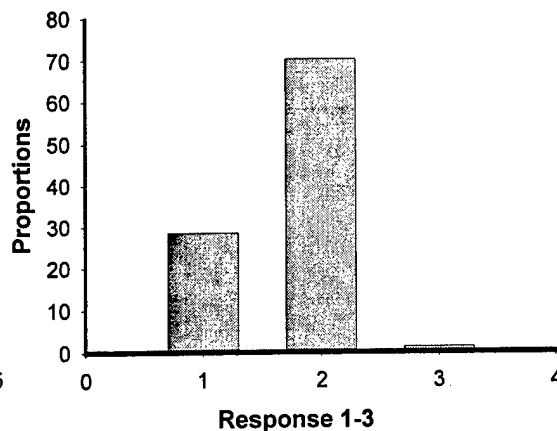


Figure 4.4: S4Q4, "Is farming your primary source of income?" (1=yes, 2=no, 3=not answered)



Property Owner Survey Results
Section 4: Property and participant demographics (continued)

Figure 4.5: S4Q5, "Are you employed in off-farm work or custom farming during the growing season?"
 (1=yes, 2=no, 3=not answered)

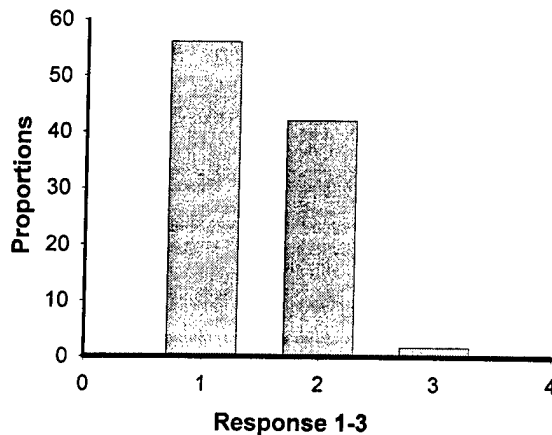


Figure 4.6: S4Q6, "How many hours per week do you spend on off-farm work or custom farming during the growing season?" (1=none, 2=1-10 hours, 3=11-20 hours, 4=21-30 hours, 5=31-40 hours, 6=more than 40 hours, 7=not answered)

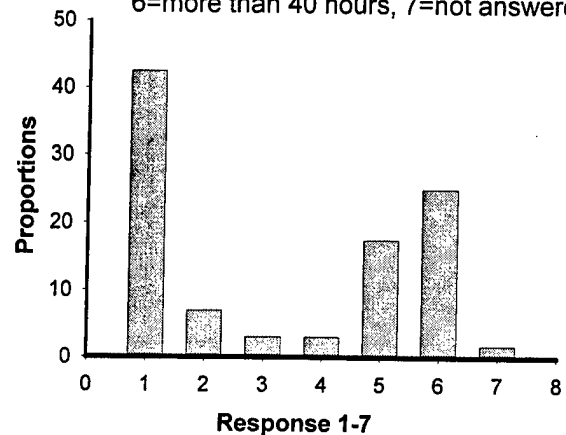


Figure 4.7: S4Q7, "Do you participate in other State / Federal land programs?"
 (1=1 other program, 2=2 other programs, 3=3 other programs, 4=4 other programs, 5=no other programs, 6=not answered)

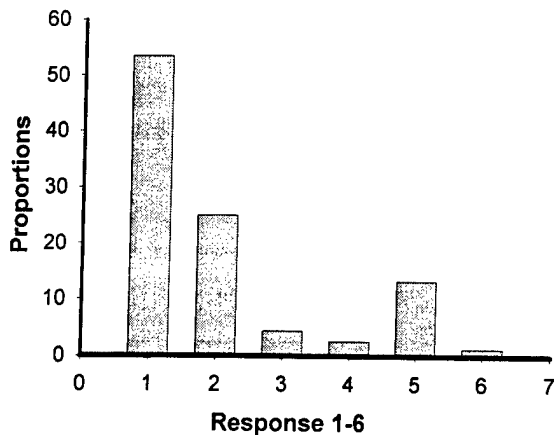
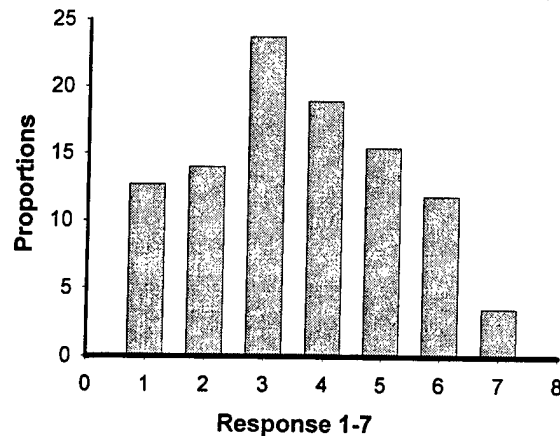


Figure 4.8: S4Q8, "If no monetary programs were available, what annual cost would you personally absorb to establish habitat on your property?" (1=none, 2=\$1-99, 3=\$100-250, 4=\$251-500, 5=\$501-1000, 6=more than \$1000, 7=not answered)



Property Owner Survey Results
Section 4: Property and participant demographics (continued)

Figure 4.9: S4Q9, "How many years have you farmed in Illinois?"
 (1=less than 1 year, 2=1-5 yrs, 3=6-10 yrs, 4=11-15 yrs, 5=16-20 yrs, 6=more than 20 yrs, 7=not answered, 8=not a farmer)

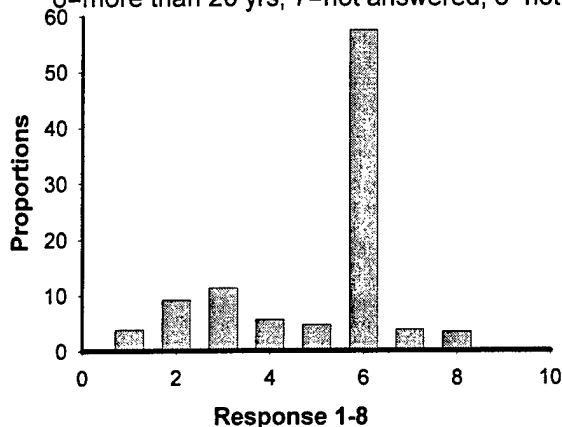


Figure 4.10: S4Q10, "Please give your age"
 (1=not answered, 2=27-35 yrs, 3=36-45 yrs, 4=46-55 yrs, 5=56-65 yrs, 6=66-75 yrs, 7=76-92 yrs)

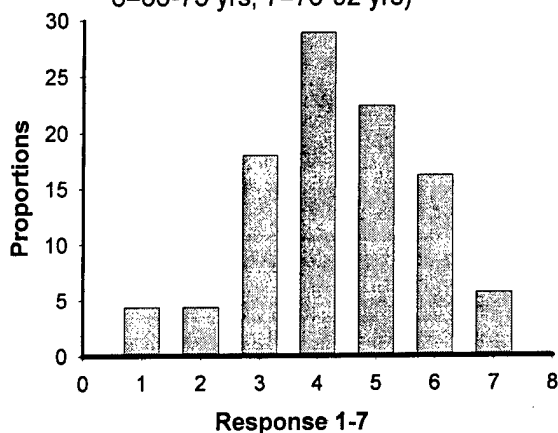


Figure 4.11: S4Q11, "What is your gender?"
 (1=male, 2=female, 3=not answered)

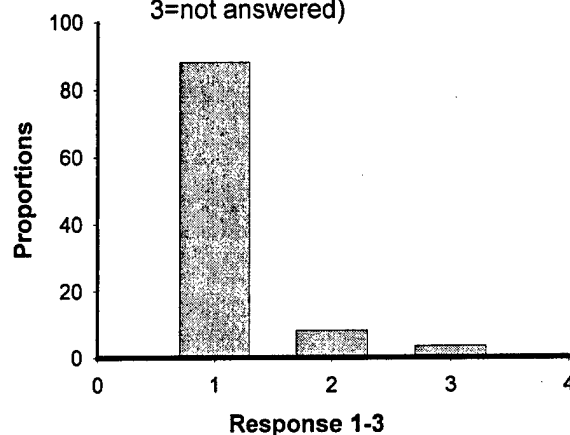


Figure 4.12: S4Q12, "What is your marital status?"
 (1=single, 2=married, 3=divorced / sep. / widowed, 4=not answered)

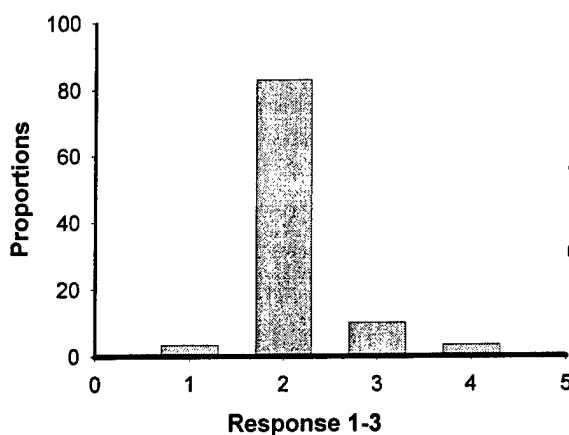
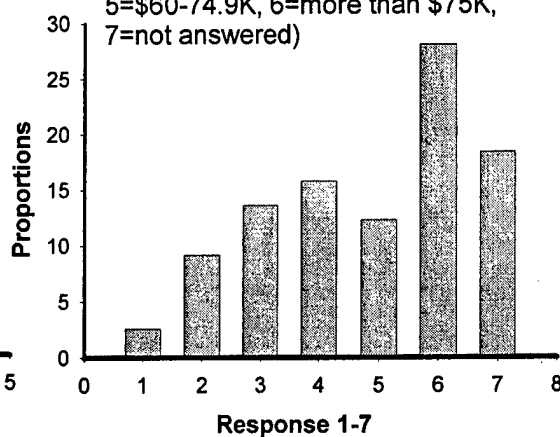


Figure 4.13: S4Q13, "What is your approximate gross household annual income?"
 (1=less than \$15K, 2=\$15-29.9K, 3=\$30-44.9K, 4=\$45-59.9K, 5=\$60-74.9K, 6=more than \$75K, 7=not answered)



Natural Resources Conservation Service (NRCS) Survey

The results of the NRCS survey provide a picture that NRCS respondents clearly perceive the administrative costs of IWEBP as less than those of other Illinois State conservation programs. Of responding NRCS offices, 96% indicated that administering the IWEBP takes up less than 15% of their time per month (Fig. 5.1) and nearly 60% felt it was easier or much easier to administer than other Illinois State conservation programs (Fig. 5.2). In spite of multiple revisions and a pilot study involving three separate NRCS / FSA offices, the survey questions corresponding to Figures 5.2 and 5.3 contained an error. In the ascending order of response choices, both questions contained the selections “less difficult” and “easier” on opposite sides of the response continuum. This error did not seem to affect interpretation of results in Fig. 5.2, but Fig. 5.3 reveals no clear understanding of how administratively difficult NRCS personnel feel the IWEBP is for participating land owners. However, additional comments indicate the low administrative cost is greatly appreciated, and NRCS respondents feel this enhances implementation of IWEBP practices. Representative comments include, “Allowing IDNR/NRCS employees to certify the planting without additional plans, contracts, and other paperwork is what makes this program so successful,” and, “Ease of enrollment helps – the initial reason (land owners) applied was for financial assistance, but the long term benefit is for wildlife.” The perceptions of NRCS respondents are echoed by land owners with comments like, “Very good results with a minimum of paperwork!”

While 56% of NRCS offices felt the IWEBP provided similar habitat preservation / creation results as other Illinois State programs, 30% felt it was more beneficial to habitat (Fig. 5.4). Nearly 90% indicated that IWEBP was successful or extremely successful in providing benefits to wildlife (Fig. 5.5). NRCS respondents also

perceive that, while benefiting wildlife in general, IWEBP is particularly successful regarding benefits to bobwhites with 85% rating IWEBP practices as successful or extremely successful (Fig. 5.6). NRCS personnel also perceive that participating land owners feel IWEBP benefits wildlife in general with slightly higher benefits to bobwhites (Figs. 5.7 and 5.8). A visual interpretation of NRCS perceptions regarding the reason land owners enroll in IWEBP (NRCSQ10) reveals a bimodal distribution (Fig. 5.9). Nearly 40% of NRCS respondents indicated they felt that more than half of land owners were participating primarily for the monetary income while almost 50% of NRCS respondents felt that most land owners enrolled to provide habitat. These responses are possibly indicative of different NRCS respondents reading the question in different ways. Land owner survey results indicate IWEBP participants are not participating to earn extra income, but the monetary incentive provided is vital to re-establishing expensive native grasses and forbs. Based on these land owner responses and written NRCS comments indicating similar perceptions, it is possible that NRCS personnel interpreted enrollment for extra income as a means to pay for expensive habitat establishment.

Though there were only 28 NRCS respondents, these representative conservation professionals clearly perceive the IWEBP as a successful, easy to administer program with high benefits for both wildlife (habitat) and land owners (monetary assistance to implement wildlife friendly practices). Many additional comments from NRCS respondents refer specifically to the importance of incentive payments in helping cover the cost of expensive native grass and forb seed, "This is an excellent program. It allows land owners the opportunity to put quality wildlife habitat on the land and helps reduce the high cost of prairie/forbs planting;" "As native seed costs continue to rise, consider increasing incentive payments."

Others comments express the same sentiment and the stewardship of land owners while reinforcing the financial reality of expensive native seed, "It is so expensive to plant the needed species of native plants... this program has helped our land owners offset the cost. Our land owners want to do what is best for wildlife and their land, but the cost is so great... if financial assistance wasn't there, many land owners wouldn't plant native species – they'd plant what was free or cheap."

Overall, the results of the NRCS survey indicate high approval for both the methods and the means through which the IWEBP improves wildlife habitat. The concept of federal, state, and local cooperation in implementing conservation programs is apparent, "New programs that support and enhance existing programs with additional technical and financial assistance are received well by area producers." The final important aspect to note is the appreciation of public (IDNR) and private (QU) cooperation by NRCS personnel, "I for one appreciate QU for having the vision to develop a program to assist landowners develop wildlife habitat."

Natural Resources Conservation Service (NRCS) Survey Results

Figure 5.1: NRCSQ1, "What percentage of time per month does your office spend administering WEBP?"

(1=0-15%, 2=16-30%, 3=31-45%, 4=46-60%, 5=61-75%, 6=more than 75%, 7=not answered)

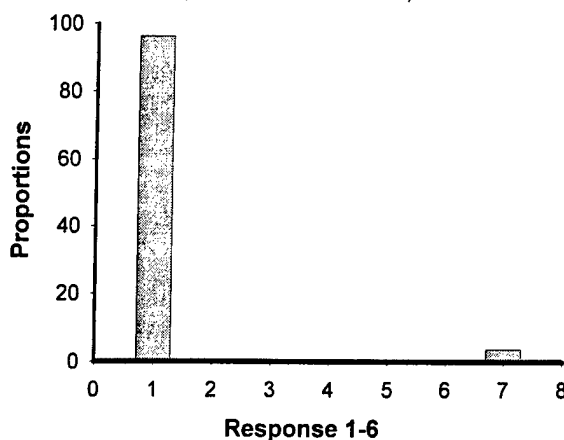


Figure 5.2: NRCSQ2, "Compared to other State conservation progs., admin of WEBP is..."

(1=much more difficult, 2=less difficult, 3=same, 4=easier, 5=much easier, 6=not answered)

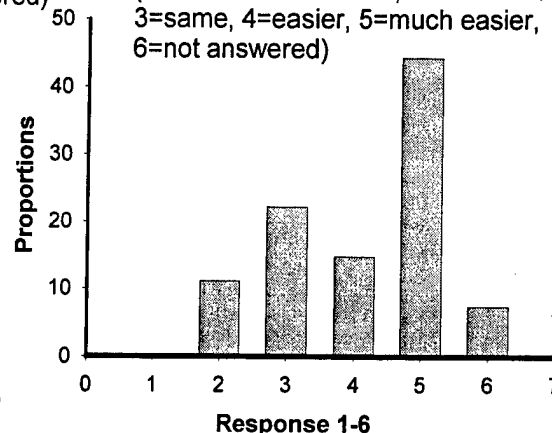


Figure 5.3: NRCSQ3, "How do you think the landowners find the WEBP as compared to other State convs. progs?"

(1=much more difficult, 2=less difficult, 3=same, 4=easier, 5=much easier, 6=not answered)

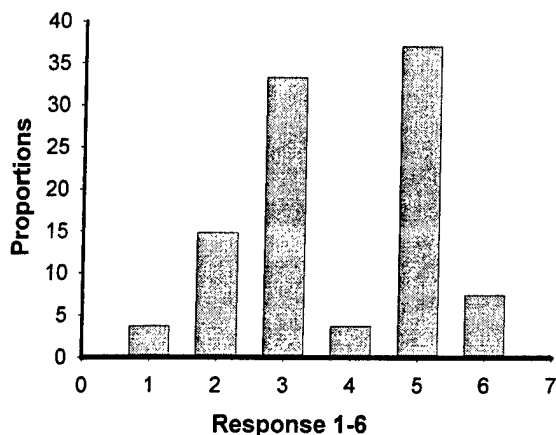


Figure 5.4: NRCSQ4, "In your opinion, compared to other State convs. progs for creation / preservation of habitat the WEBP is..."

(1=far less beneficial, 2=less beneficial, 3=same, 4=more beneficial, 5=much more beneficial, 6=not answered)

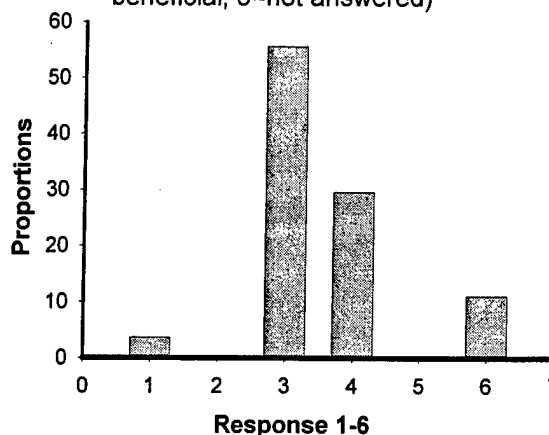
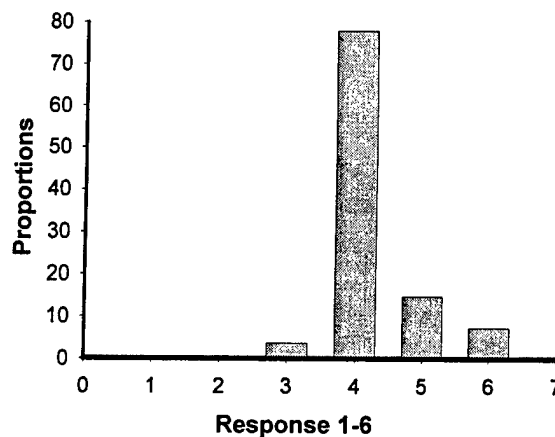


Figure 5.5: NRCSQ6, "How would you rate the WEBP regarding benefits TO WILDLIFE?"

(1=extremely unsuccessful, 2=unsuccessful, 3=no change, 4=successful, 5=extremely successful, 6=not answered)



Natural Resources Conservation Service (NRCS) Survey Results

Figures 5.6-5.8 "Please answer based on your personal opinion":

1=extremely unsuccessful, 2=unsuccessful, 3=no change, 4=successful, 5=extremely successful, 6=not answered

Figure 5.6: NRCSQ7, "How would you rate the WEBP regarding benefits TO QUAIL?"

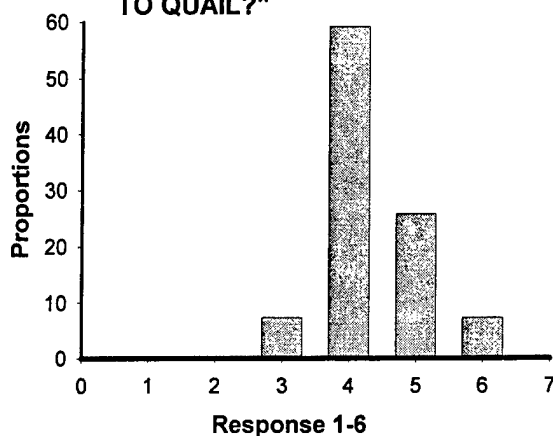


Figure 5.7: NRCSQ8, "How do you think the participants in WEBP perceive its benefits TO WILDLIFE?"

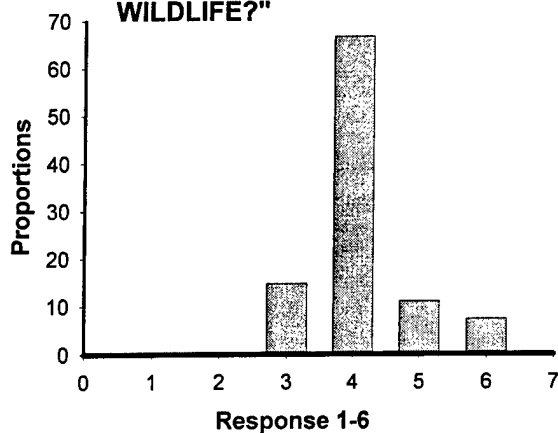


Figure 5.8: NRCSQ9, "How do you think the participants in WEBP perceive its benefits TO QUAIL?"

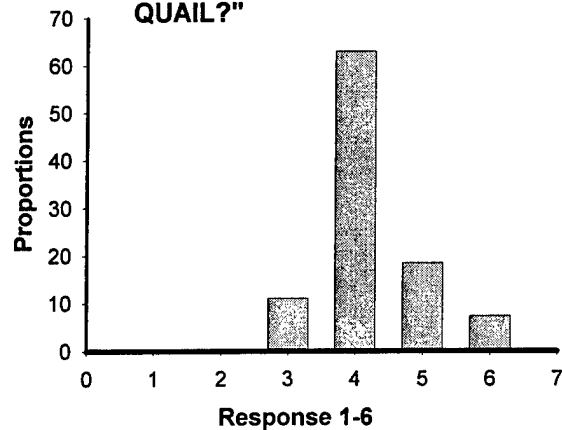
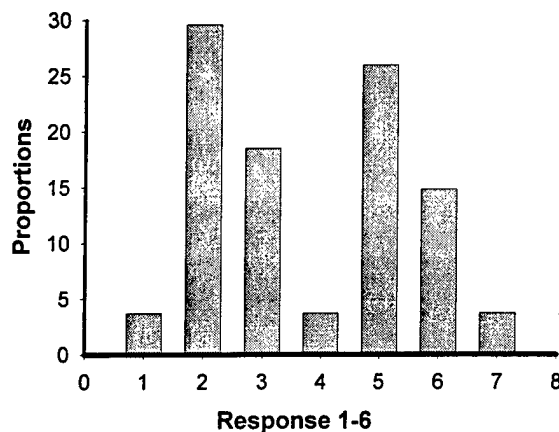


Figure 5.9: NRCSQ10, "What percentage of participants do you think enroll in the WEBP primarily for the monetary income vs. providing habitat?"

(1=none, 2=less than 10%, 3=11-25%, 4=26-50%, 5=51-75%, 6=76-100%, 7=not answered)



Correlations and Higher Order Analyses

Histogram interpretation provides analysis of trends within respondent populations, but information gleaned is usually restricted to particular questions being interpreted. Examining correlations in responses between selected questions allows for an evaluation of the authenticity of responses by detecting whether certain expected correlations actually exist. Further statistical analysis can also determine whether responses to questions can predict or account for responses to other questions. A number of these types of correlations are examined below in order to learn more about the respondent populations as well as perceptions shared by both land owner and NRCS populations.

One important component of IWEBP is the monetary incentive for implementing approved habitat practices. There is a positive correlation (Pearson's: $r = 0.459$, $p = 0.00$; Spearman's: $r = 0.458$) between responses to S2Q5 (Fig. 2.5) regarding monetary incentive as a reason for participation and responses to S3Q8 (Fig. 3.8) regarding the importance of monetary assistance for habitat development. Though the correlation is positive, response distribution as indicated by the histograms is notably different. Comments provided on the surveys suggest that, while monetary assistance is important to land owners overall, it is not important because they consider the incentive to be extra income. Rather, most land owners want to implement wildlife-friendly practices on their land, and the monetary incentive provided by IWEBP helps defray the high cost of re-establishing native grasses and forbs. Multiple written comments support this conclusion: "The additional cash incentive (in addition to CRP) helps subsidize habitat improvement, filter strips, and improves the overall quality of the land;" "The monetary incentive is necessary for conversion to native grasses;" "(IWEBP) is a super program that helped us defray the large cost it took us to plant native grasses on our farm;" "Excellent way to offset the cost of establishing quality wildlife

habitat.” These comments seem to indicate that many participants would be attempting to provide wildlife habitat on their property even without monetary incentives. Faced with the economic reality of expensive native grass and forb seed however, these conservationists require financial assistance in order to continue their stewardship of the land.

A negative correlation between the number of conservation professional visits (S2Q8, Fig. 2.7) and perception of modern agriculture’s impact on wildlife (S2Q15, Fig. 2.14) suggests a strong educational component to interactions between land owners and conservation professionals (Pearson’s: $r = -0.306$, $p = 0.000$; Spearman’s: $r = -0.323$). This negative correlation indicates that land owners who have little contact with their NRCS or IDNR biologists tend to feel modern farming practices have either no effect or a beneficial effect on wildlife populations. Conversely, those land owners who have frequent contact with their NRCS or IDNR biologist better understand the importance of habitat and the deleterious effects of modern farming practices (Brennan 1991, Jenkins 2000). There is also a positive correlation between the frequency of hunting (S3Q1, Fig. 3.1) and the frequency of NRCS / IDNR biologist visits to land owner’s property (S2Q8, Fig. 2.7) (Pearson’s: $r = 0.174$, $p = 0.008$; Spearman’s: $r = 0.187$). Although not strong, this correlation further strengthens histogram interpretations in section 3 (hunting and conservation) indicating that hunters in the survey population (more than 75% of respondents; Fig. 3.1) are active in seeking out conservation education.

A positive correlation exists between the importance value of wildlife on land owner property (S3Q6, Fig. 3.6) and a stated willingness to pay out of pocket to establish wildlife habitat (S4Q8, Fig. 4.8) (Pearson’s: $r = 0.422$, $p = 0.000$; Spearman’s: $r = 0.416$). While responses to S3Q6 (Fig. 3.6) and S3Q7 (Fig. 3.7) demonstrate high intrinsic value placed on wildlife and habitat by land owners, the positive correlation in responses to S3Q6 and S4Q8

(Fig. 4.8) show a consistency in behavior on the part of respondents in attaching economic value to intrinsic value. Increasing land owner willingness to pay amounts out of pocket to establish wildlife habitat is also positively correlated with increasing annual household income (Pearson's: $r = 0.395$, $p = 0.000$; Spearman's: $r = 0.393$). As anticipated, increasing property size (S4Q1, Fig. 4.1) is statistically positively correlated with increasing annual household income (S4Q13, Fig. 4.13) (Pearson's: $r = 0.179$, $p = 0.014$; Spearman's: $r = 0.180$) but the correlation is not particularly robust. This lack of strength could be explained by a large number of retirees in the sample population, as suggested by Figures 4.9 and 4.10.

The perceived importance of providing habitat (S3Q7, Fig. 3.7) and the importance of a political candidates' support of conservation programs (S3Q11, Fig. 3.11) are positively correlated (Pearson's: $r = 0.434$, $p = 0.000$; Spearman's: $r = 0.464$). Only 6% of respondents consider a candidate's support of conservation programs not important or slightly important, so this coalition of like-minded citizens reflects the potential for conservation to move to the forefront in our nation's agricultural policy. Though encouraging for pro-conservation farm policy, there is still a potentially large disconnect between the definition of conservation for this sample population and other sectors of the national populace. These land owners tend to look at conservation initiatives as those that encourage a re-introduction of native habitat for a multi-use landscape. Wildlife habitat, soil & water conservation, agriculture, and living space are all encompassed in their perception of a good conservation initiative. These might very well be anathema to other sectors of the public who view conservation as nothing less than the total exclusion of human presence in particular areas. If IDNR and QU can expand IWEBP to include or receive the endorsement of other private conservation organizations (i.e., The Nature Conservancy), then there is further potential for increased support from elected officials and private citizens.

Predicting responses to one question given a particular response to another question yielded two interesting additional relationships. First, individuals who felt predator control was the most important factor to increase bobwhite populations also tended to feel that modern farming practices have had less of an effect on wildlife populations (Fig. 6.1) than those who felt alteration of modern farming practices is the best way to improve bobwhite populations (Fig. 6.2) (S1Q7 and S2Q15 response comparisons: Mann-Whitney U test statistic = 7462.500, $p = 0.001$). A total of 88 respondents (mean age of 56.6 years) felt the best way to help bobwhite populations is to reduce / control predators (S1Q7, Fig. 1.7). Of these, 57% perceived a decrease and 28% a great decrease in wildlife populations due to modern farming practices (Fig. 6.1). On the other hand, a total of 137 respondents (mean age of 54.7 years) felt the best way to help bobwhite populations is to alter modern farming practices. Of these, 42% perceived a decrease and 50% a great decrease in wildlife populations due to modern farming practices (Fig. 6.2). In short, land owners who feel alteration of modern agricultural practices is the best way to help bobwhite populations also feel current practices have had a more severe impact on wildlife populations (Fig. 6.2). Land owners who feel predator control is the best way to help bobwhite populations still perceive the deleterious effect of modern farming practices on wildlife populations, but not to the same extent (Fig. 6.1).

The second profile examines perceived farm productivity due to IWEBP practices and the length of time the land owner has farmed in Illinois. A Mann-Whitney U test comparing responses from S2Q14 (IWEBP does/does not decrease productivity) and S4Q9 (time farming in Illinois) was not statistically significant ($U = 4864.000$, $p = 0.264$). After removing all respondents who had farmed Illinois for more than 20 years, a second Mann-Whitney U test was performed comparing (S1Q7 and S2Q15). The test still revealed no

statistically significant comparison between perception that IWEBP does/does not decrease productivity and the length of time the respondent has farmed in Illinois ($U = 652.000$, $p = 0.283$).

The initial hypothesis was those who feel implementation of IWEBP approved practices *does not* decrease farm productivity (Fig. 6.3) would be younger land owners (fewer years farming in Illinois). Conversely, those who feel providing habitat through IWEBP practices *does* decrease farm productivity (Fig. 6.4) were expected to be older land owners (more years farming in Illinois). This hypothesis was anticipated due to an expectation that older land owners would be more reluctant to enroll portions of their land into conservation programs, but histogram interpretation is inconclusive due to the extremely high proportion of respondents who have farmed in Illinois for more than 20 years (Figs. 6.3 and 6.4). There is a negative correlation between the age of the respondent (S4Q10) and the number of NRCS visits to their property (S2Q8) (Pearson's: $r = -0.202$, $p = 0.003$; Spearman's: $r = -0.191$) meaning that older participants tend to have slightly fewer NRCS visits. Visits by NRCS or IDNR personnel tend to be educational so it may actually be that older land owners are more willing to enroll acreage in conservation programs and understand that participation does not decrease productivity in the long run because they have the experience and perspective of living through the Dust Bowl.

Responses indicate that both land owner participants and NRCS personnel perceive IWEBP as beneficial for wildlife habitat. In order to compare perceptions regarding wildlife benefits of IWEBP, a Mann-Whitney U test was conducted between S2Q13 (rate effectiveness of IWEBP for improving wildlife habitat, Fig. 2.12) and NRCS6 (rate IWEBP benefits to wildlife, Fig. 5.5). The Mann-Whitney U test statistic and probability indicate there is no statistically significant difference between perceptions of land owners and

perceptions of NRCS personnel regarding IWEBP benefits to wildlife ($U = 2647.000$, $p = 0.530$). This relationship builds on the visual interpretation of response histograms where over 80% of land owners (Fig. 2.12) and over 90% of NRCS personnel rate IWEBP as good/excellent or successful/extremely successful in benefiting wildlife and habitat.

Property Owner Survey Results Higher Order Analyses and Correlations

Figure 6.1: Given *most important factor* to help quail is **reduce / control predators** (n=88)

S2Q15 "Modern farming practices in IL have caused wildlife populations to"
(1=great decrease, 2=decrease, 3=no change, 4=increase, 5=great increase)

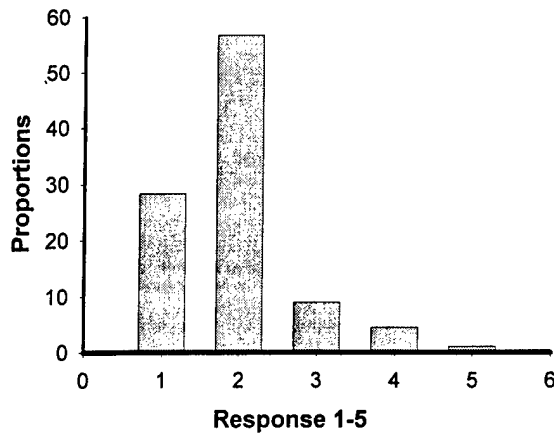


Figure 6.2: Given *most important factor* to help quail is **alter mod ag practices** (n=137)

S2Q15 "Modern farming practices in IL have caused wildlife populations to"
(1=great decrease, 2=decrease, 3=no change, 4=increase, 5=great increase)

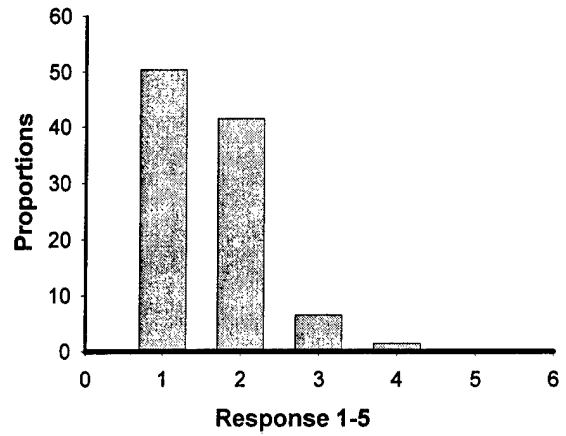


Figure 6.3: Given their opinion that WEBP **does not** decrease farm productivity... (n=120)

S4Q9 "How long have you farmed in IL?"
(1=< 1 yr, 2=1-5 yrs, 3=6-10 yrs, 4=11-15 yrs, 5=16-20 yrs, 6=> 20 yrs)

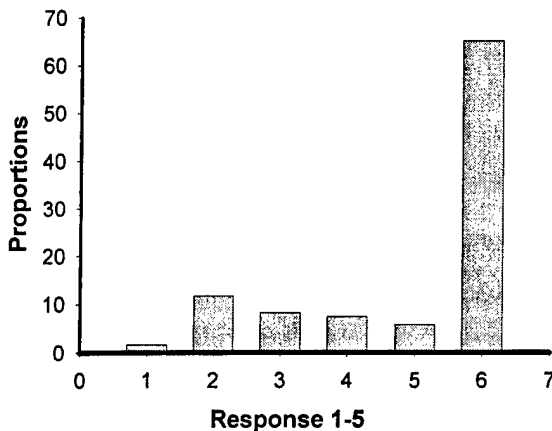
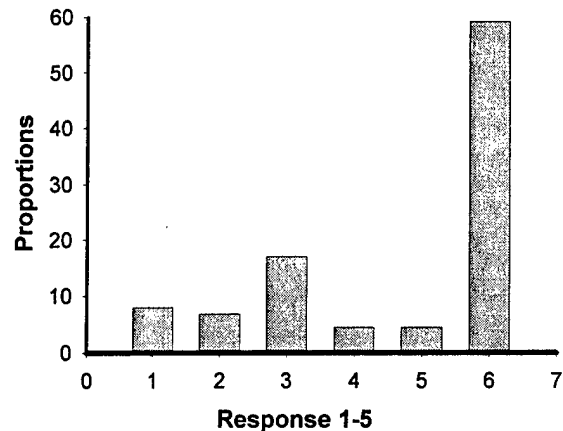


Figure 6.4: Given their opinion that WEBP **does** decrease farm productivity... (n=88)

S4Q9 "How long have you farmed in IL?"
(1=< 1 yr, 2=1-5 yrs, 3=6-10 yrs, 4=11-15 yrs, 5=16-20 yrs, 6=> 20 yrs)



CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Observations of Wildlife

Interpretations of proportional response histograms and additional statistical tests indicate that land owners and NRCS personnel feel that implementation of IWEBP practices improves both the quality of habitat and the quantity of wildlife on enrolled properties. Land owner perceptions regarding the relative abundance of statewide bobwhite quail populations coincide with IDNR corroborated decreases (David 1999, 2000, 2001), but declines are seen as markedly less on the properties of land owners implementing wildlife friendly IWEBP practices. For those few land owners who indicated a decrease in the number of bobwhites on their property, written comments indicate a perception that declines will be temporary as native seedlings become established and begin to provide suitable habitat. The majority of responding land owners recognize the loss and destruction of habitat as the largest factor influencing bobwhite declines, but a significant portion of respondents are more concerned about the effects of increased predation. Loss of habitat is the largest factor affecting survival and reproduction of bobwhites and other wildlife (Burger et. al. 1990, Jenkins 2000, Roseberry and David 1994, Roseberry et. al. 1994) so increased education explaining this relationship can only help future conservation efforts. Efforts to educate land owners / operators could take the form of pamphlets and/or posters identifying predators as an issue, but clarifying that habitat is the underlying denominator for good upland wildlife populations. This information could be provided through high school Future Farmers of America (FFA) chapters, county fairs, etc. as well as local NRCS / FSA offices.

Program Participation and Farming Practices

Response trends from this section reveal land owners enroll in the IWEBP due in large part to the high intrinsic value they place on wildlife and a sense of stewardship for the land. Improved hunting opportunities were important, but respondents generally attached a higher importance value to fulfillment of their sense of responsibility and pride in restoring habitat. Few land owners appear to be enrolling for IWEBP practices solely for monetary income, but the importance of the financial incentive increases when phrased in terms of its benefit to re-establishing native habitat.

Land owners learn about conservation opportunities provided by IWEBP primarily through their county NRCS / FSA offices, but word of mouth and verbal communication with IDNR personnel, friends, or relatives are the most common means of exposure. Enrolled land owners tend to have both a high level of recurrent interaction with conservation professionals (NRCS, FSA, IDNR) and a high satisfaction level regarding service provided. IWEBP is overwhelmingly accepted and recommended by current participants, but with less than 20% of respondents enrolled for less than one year (Fig. 2.9), the number of new land owners enrolling appears to be declining over time.

The adverse effects of modern farming practices on wildlife populations are generally recognized, but there is a division among respondents regarding the perception that implementation of IWEBP practices does decrease (40%) or does not decrease (56%) farm productivity (Fig. 2.13). The myth that land not under a row crop is unproductive land provides an educational challenge to change a cultural way of thinking. IDNR, NRCS, FSA, and QU personnel (including local chapter members) should all be encouraged to point out the benefits of wildlife habitat preservation to their friends, neighbors, and clients alike.

Hunting and Conservation

Over 75% of land owners hunt on their property (Fig. 3.1) but more than 50% of participating land owners do not hunt bobwhites on their property (Fig. 3.2). Unsolicited written comments suggest that the reason enrolled land owners do not hunt bobwhites is because there are too few birds to hunt. The respondent population is well informed regarding conservation and habitat management issues, and their reading and viewing habits indicate respondents actively seek further education regarding wildlife friendly practices. Land owners attach a high intrinsic value to the presence of wildlife on their property and to the importance of providing and preserving habitat. Respondents attach a high level of importance to the conservation efforts of private organizations and state/federal conservation programs alike. Similarly, decisions on voting for public officials are strongly influenced by a candidate's support of conservation programs. This respondent population is not necessarily a representative sample of Illinois land owners as a whole because, by virtue of IWEBP participation, they are already more proactive and informed in adopting wildlife friendly practices. While conservation programs seem to enjoy broad approval from participating rural land owners and sportsmen, a much more politically influential front would be provided if suburban and urban citizens also recognized their value. Further studies surveying the attitudes and perceptions of both land owners who are not enrolled in conservation programs and the general public alike could provide valuable insight to further improve the image and implementation of IWEBP and similar initiatives.

Property and Participant Demographics

All respondents own their land with approximately 10% leasing additional property and nearly 70% purchasing their property as opposed to inheriting it. Only slightly over 20%

of respondents have properties of less than 80 acres and the majority of participants in IWEBP own more than 160 acres. A surprisingly low number of respondents list farming as their primary source of income but this could be due to the possibility that a high proportion of responding land owners are retired. As expected since IWEBP is primarily designed to augment CRP acreage, more than 75% of respondents indicated participation in at least one other conservation program. A willingness to pay out of pocket provide/preserve habitat is exhibited but not to the extent that land owners can fund conservation practices (i.e., native grass/forb planting) without monetary assistance. Land owners are more than 80% male (Fig. 4.11) and more than 80% married (Fig. 4.12) and, as expected, the out of pocket expense respondents are willing to pay increases with increasing annual household income.

Natural Resources Conservation Service (NRCS) Survey

NRCS respondents generally feel IWEBP carries less administrative burden than other state sponsored conservation programs. In comparing IWEBP to other Illinois State conservation programs, more than 50% of NRCS respondents feel it provides equitable habitat benefits but nearly 30% feel it is much more beneficial (Fig. 5.4). Perceived benefits of IWEBP to wildlife are high with respondents indicating particular benefit for bobwhites. NRCS personnel also feel land owners value IWEBP and perceive implementation of approved practices as very beneficial to wildlife and bobwhites through restoration of habitat.

Recommendations

Land owners and NRCS respondents alike have high regard for IWEBP and appreciate both the brevity of enrollment requirements and the overall improvement of their land through the implementation of conservation and habitat improvement practices.

Interpretation of proportional response histograms and higher order analyses all suggest a highly successful, highly appreciated program by both land owner participants and conservation professionals. However, there were a few written comments that are indicative of the need to ensure all county NRCS / FSA offices are aware of IWEBP and enrollment requirements and limitations. One NRCS respondent returned a blank survey with, "What is this?" as the only comment and another added, "Is this the Quail Unlimited program?" While these were anomalous responses they are indicative of a need for further education. Uninformed conservation professionals can possibly undermine conservation efforts through poor guidance to interested land owners as seen here, "I was told I was in the program but then told, after discing my ground, that since I was in the last two years of CRP that I wasn't eligible." Since verbal communication represents such a substantial channel for learning of IWEBP, correct dissemination of information is vital to the continued success of the program.

Fortunately, a large majority of respondents to both surveys valued and appreciated the combined efforts of IDNR and QU in creating IWEBP. Enrolled land owners feel very favorably inclined to the program, but the apparent decline in annual enrollment since IWEBP inception is a concern. An expanded advertising strategy might be one way to renew project enrollments. Providing IWEBP posters and brochures to venues such as grocery stores, Department of Motor Vehicles, etc. could spark awareness in many new land owners who are not familiar with assistance available through their county NRCS / FSA office.

In summary, IWEBP is an excellent and valuable program and it would be wise to heed the words of one respondent who views life with a tremendous amount of perspective, "I'm 92 and not much left in life... can't get around much, but I do drive car yet and I enjoy the wildlife! Thanks!"

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APPENDIX A
LANDOWNER / OPERATOR COVER LETTER



SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

Dear Conservationist,

Thank you for your participation in the Wildlife Enhancement Bonus Program. Your dedication to improving wildlife habitat is essential for both game and non-game species and your efforts are greatly appreciated! Please complete and return the enclosed questionnaire concerning your participation and experiences with the Wildlife Enhancement Bonus Program. This is a voluntary survey sent out to all Wildlife Enhancement Bonus Program participants, and your responses will remain anonymous.

The information you and other participants provide will be used to evaluate program benefits and identify possible improvements for both participants and wildlife habitat. This study is part of a research project at Southern Illinois University - Edwardsville, and results will be presented to both the IL DNR and IL Quail Unlimited.

Please take 15 minutes to complete the enclosed questionnaire and return using the postage-paid envelope provided.

If you have any questions, please feel free to contact Steve Hasstedt or Dr. Paul Brunkow in the SIUE Biological Sciences Department at (618) 650-2976.

Thank you for your time and assistance!

Sincerely

A handwritten signature in black ink, appearing to read 'Steve Hasstedt'.

Steven C.M. Hasstedt, Capt, USAF
Graduate Assistant

A handwritten signature in black ink, appearing to read 'Paul E. Brunkow'.

Paul E. Brunkow, Ph.D.
Assistant Professor of Biological Sciences

APPENDIX B
LANDOWNER / OPERATOR SURVEY

Illinois Wildlife Enhancement Bonus Program

Sponsored By
Illinois Department of Natural Resources
Division of Wildlife Resources
Habitat Stamp Fund
and
Illinois Quail Unlimited



ALL RESPONSES ARE CONFIDENTIAL
THANK YOU FOR YOUR COOPERATION!

Postage-paid return envelope provided



Southern Illinois University, Edwardsville
Environmental Science Program
Department of Biological Sciences
in cooperation with
Illinois Department of Natural Resources (IDNR)
and
Quail Unlimited

Please take 15 minutes to complete and return this voluntary questionnaire. Your responses will provide valuable information on how to improve and expand programs providing wildlife habitat.

QUESTIONNAIRE: Land Owner/Operator
Wildlife Enhancement Bonus Program

Section 1: Observations of wildlife

1) Compared to 10 years ago *on your property*, today there are

Far fewer quail	Fewer quail	Same as before	More quail	Many more quail
1	2	3	4	5

2) Compared to 10 years ago *in Illinois*, today there are

Far fewer quail	Fewer quail	Same as before	More quail	Many more quail
1	2	3	4	5

3) Compared to before beginning participation in the Wildlife Enhancement Bonus Program, *the quality of wildlife* habitat on your farm is

Much worse	Worse	Same as before	Better	Much better
1	2	3	4	5

4) How would you rate the *amount of wildlife* you've observed on your property since beginning participation in the program?

Much less wildlife	Less wildlife	Same as before	More wildlife	Much more wildlife
1	2	3	4	5

5) How would you rate the *number of quail* you've observed on your property since beginning participation in the program?

Far fewer quail	Fewer quail	Same as before	More quail	Many more quail
1	2	3	4	5

6) Do you think the amount of increase / decrease in wildlife you've observed on your property is directly related to your participation in the Wildlife Enhancement Bonus Program?

- ☐ yes
☐ no
☐ no change in wildlife

7) What one factor do you think would *most* help quail populations increase?

- ☐ reduce / control predators
☐ alter modern farming practices to preserve / produce more habitat
☐ reduce / eliminate hunting

Section 2: Program participation and farming practices

Please rate the following reasons for your participation in the Wildlife Enhancement Bonus Program:

	Not important	Slightly important	Moderately important	Very important	Extremely important
1) Improved wildlife viewing opportunities	1	2	3	4	5
2) Improved soil and water quality	1	2	3	4	5
3) Improved hunting opportunities	1	2	3	4	5
4) Sense of responsibility / pride	1	2	3	4	5
5) Monetary incentive	1	2	3	4	5

6) Other (please specify) _____

7) How did you learn about the Wildlife Enhancement Bonus Program? (check all that apply)

- ☐ I am a member of Quail Unlimited
☐ USDA NRCS / FSA personnel
☐ IL Department of Natural Resources (IDNR) personnel
☐ IDNR / Quail Unlimited Brochure
☐ Organized event (i.e., IL Quail Management Workshop)
☐ From a friend or relative
☐ Other (please specify) _____

8) How frequently have you had contact with USDA NRCS / FSA personnel and/or an IDNR District Wildlife Biologist over the last two years?

- ☐ zero times ☐ 4-6 times ☐ more than 10 times
☐ 1-3 times ☐ 7-10 times

9) If you've had contact, how would you rate the service provided by USDA NRCS / FSA personnel or IDNR District Wildlife Biologists?

Poor	Fair	Average	Good	Excellent
1	2	3	4	5

10) How long have you been participating in the Wildlife Enhancement Bonus Program?

- ☐ Less than 1 year / just starting
☐ 1 year
☐ 2 years

11) How long do you plan to continue participating in the Wildlife Enhancement Bonus Program?

- ☐ 1-2 more years ☐ do not plan to continue participating
☐ 3-5 more years
☐ 6-10 more years

12) Would you recommend participation in this program to a friend or family member?

- ☐ yes
☐ no

12 a) Why or why not?

13) Based on your own personal experience, how would you rate the effectiveness of the Wildlife Enhancement Bonus Program for improving habitat?

Poor	Fair	Average	Good	Excellent
1	2	3	4	5

14) Providing wildlife habitat through the Wildlife Enhancement Bonus Program

☐ does (or) ☐ does not decrease planting and/or harvest productivity on your farm.

15) Changes in Illinois farming practices over the last 20-30 years (i.e., increase in monocultural farms, continuous crop rotation / no fallow fields, increased herbicide / pesticide use, etc.) have caused wildlife populations to

Greatly decrease	Decrease	No change	Increase	Greatly increase
1	2	3	4	5

Section 3: Hunting and conservation

1) How often have you or your immediate family members hunted on your property in the last five years?

- ☐ zero times – have not hunted
☐ 1-5 times per year
☐ more than 5 times per year but less than 10 times
☐ more than 10 times per year

2) If you hunt on your property, approximately how many times each season do you hunt for Bobwhite quail?

- ☐ zero times – do not hunt quail ☐ 7-10 times per year
☐ 1-3 times per year ☐ more than 10 times per year
☐ 4-6 times per year

3) Please check all that apply to you: "I currently subscribe to..."

- ☐ hunting / fishing magazines
☐ conservation magazines (i.e., Outdoor Illinois)
☐ other conservation organizations (i.e., Quail Unlimited, Ducks Unlimited, Pheasants Forever, etc.)
☐ none of the above

4) Do you watch hunting or fishing shows on TV?

- ☐ yes
☐ no

5) If you watch hunting / fishing shows on TV, how frequently do you watch?

Occasionally Once per month Once per week More than once
per week Every day

1 2 3 4 5

Please rate the following based on your personal opinion:

	Not important	Slightly important	Moderately important	Very important	Extremely important
6) How important is having wildlife on my property?	1	2	3	4	5
7) How important is providing and preserving habitat?	1	2	3	4	5
8) How important is the fact that the Wildlife Enhancement Bonus Program provides monetary assistance for habitat development?	1	2	3	4	5
9) How important are private conservation organizations (i.e., QU, DU) to preserving / protecting habitat?	1	2	3	4	5
10) How important are State and Federal programs to preserving / protecting habitat?	1	2	3	4	5
11) When voting for public officials, how important is a candidate's support of conservation programs?	1	2	3	4	5

Section 4: Property and participant demographics

1) What is the total acreage of your property?

- ☐ less than 80 acres ☐ 501-1500 acres
☐ 81-160 acres ☐ more than 1500 acres
☐ 161-500 acres

2) Do you

- ☐ own your property?
☐ lease your property?

3) If you own your land, did you

- ☐ purchase the property?
☐ inherit the property / family farm?

4) Is farming your primary source of income?

- ☐ yes
☐ no

5) Are you employed in off-farm work or custom farming during the growing season?

- ☐ yes
☐ no

6) How many hours per week do you spend on off-farm work or custom farming during the growing season?

- ☐ none ☐ 21-30 hours
☐ 1-10 hours ☐ 31-40 hours
☐ 11-20 hours ☐ more than 40 hours

7) Do you participate in other State / Federal land programs (i.e., CRP, WRP, WHIP, EQIP, Acres For Wildlife)?

- ☐ yes, 1 other program
☐ yes, 2 other programs
☐ yes, 3 other programs
☐ yes, 4 or more other programs
☐ no

If "yes", please list all _____

8) If none of these State / Federal land programs were available, what are the annual costs you would be willing to personally absorb to establish wildlife habitat on your farm?

<input type="checkbox"/> none	<input type="checkbox"/> \$251-\$500
<input type="checkbox"/> \$1-\$99	<input type="checkbox"/> \$501-\$1000
<input type="checkbox"/> \$100-\$250	<input type="checkbox"/> more than \$1000

9) How many years have you farmed in Illinois?

<input type="checkbox"/> less than one year	<input type="checkbox"/> 11-15 years
<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 16-20 years
<input type="checkbox"/> 6-10 years	<input type="checkbox"/> more than 20 years

10) Please give your age. years

11) What is your gender? ☐ Male ☐ Female

12) What is your marital status?

<input type="checkbox"/> Single (never married)
<input type="checkbox"/> Married
<input type="checkbox"/> Divorced / Separated / Widowed

13) What is your approximate total (gross) household income?

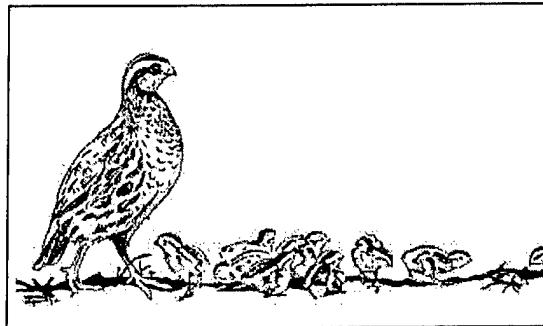
<input type="checkbox"/> less than \$15,000	<input type="checkbox"/> \$45,000 to \$59,999
<input type="checkbox"/> \$15,000 to \$29,999	<input type="checkbox"/> \$60,000 to \$74,999
<input type="checkbox"/> \$30,000 to \$44,999	<input type="checkbox"/> more than \$75,000

COMMENTS

Return envelope is provided – postage paid. Thank you for your time and assistance!

Your input will help us improve wildlife habitat programs in Illinois.

THANKS FOR YOUR SUPPORT!



APPENDIX C
NRCS COVER LETTER



SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

Dear Conservation Professional,

Thank you for your dedication to soil and water conservation. Your expertise and assistance to landowners improves wildlife habitat for both game and non-game species and your efforts are greatly appreciated! Your conservation district has been identified as containing participants in the Illinois Wildlife Enhancement Bonus Program. Please complete and return the enclosed questionnaire concerning your participation and experiences with the Wildlife Enhancement Bonus Program.

The information you and other participants provide will be used to evaluate benefits and to identify possible improvements to this program for both participants and wildlife habitat. This study is part of a research project at the University of Southern Illinois, Edwardsville, and results will be presented to both the IL DNR and IL Quail Unlimited.

This is a voluntary survey sent out to all conservation districts with Wildlife Enhancement Bonus Program participants -- your personal responses will be anonymous. Separate surveys have been sent to all program participants. Please take 5 minutes to complete the enclosed questionnaire and a postage-paid envelope is provided for returning the questionnaire to us.

If you have any questions please feel free to contact Steve Hasstedt or Dr. Paul Brunkow in the SIUE Biological Sciences Department at (618) 650-2976.

Thank you for your time and assistance!

Sincerely

A handwritten signature in black ink, appearing to read 'Steve Hasstedt'.

Steven C.M. Hasstedt, Capt, USAF
Graduate Assistant

A handwritten signature in black ink, appearing to read 'Paul E. Brunkow'.

Paul E. Brunkow, Ph.D.
Assistant Professor of Biological Sciences

APPENDIX D
NRCS SURVEY

Illinois Wildlife Enhancement Bonus Program

**Sponsored By
 Illinois Department of Natural Resources
 Division of Wildlife Resources
 Habitat Stamp Fund
 and
 Illinois Quail Unlimited**



**ALL RESPONSES ARE CONFIDENTIAL
 THANK YOU FOR YOUR COOPERATION!**

Postage-paid return envelope provided



SIU
 SOUTHERN ILLINOIS UNIVERSITY
 EDWARDSVILLE



Southern Illinois University, Edwardsville
 Environmental Science Program
 Department of Biological Sciences
 in cooperation with
 Illinois Department of Natural Resources (IDNR)
 and
 Quail Unlimited

Please take 5 minutes to complete and return this voluntary questionnaire. Your responses will provide valuable information on how to improve and expand programs providing wildlife habitat.

QUESTIONNAIRE: NRCS/FSA OFFICE
Wildlife Enhancement Bonus Program

1) What percentage of time per month does your office spend administering the Wildlife Enhancement Bonus Program (i.e., paper work, program planning, farm visits)?

- ☐ 0-15%
☐ 16-30%
☐ 31-45%
☐ 46-60%
☐ 61-75%
☐ more than 75%

2) Compared to other State conservation programs (i.e., WHIP, IL Habitat Fund, FDA, SIP) administration of the Wildlife Enhancement Bonus Program is

Much more difficult	Less difficult	Same as others	Easier	Much easier
1	2	3	4	5

3) How do you think the landowners / operators find participating in the Wildlife Habitat Enhancement Program as compared to participation in other State conservation programs?

Much more difficult	Less difficult	Same as others	Easier	Much easier
1	2	3	4	5

4) In your opinion, compared to other State conservation programs with regard to creation and preservation of habitat, the Wildlife Enhancement Bonus Program is

Far less beneficial	Less beneficial	Same as others	More beneficial	Much more beneficial
1	2	3	4	5

5) In your county, approximately what percentage of participating properties are

- a) less than 80 acres _____
 b) 81-160 acres _____
 c) 161-500 acres _____
 d) 501-1500 acres _____
 e) more than 1500 acres _____

Please answer the following based on your personal opinion:

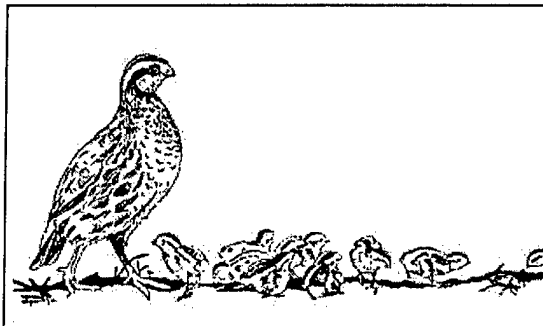
	Extremely unsuccessful	Unsuccessful	No change	Successful	Extremely Successful
6) How would you rate the Wildlife Enhancement Bonus Program regarding its benefits to wildlife ?	1	2	3	4	5
7) How would you rate the Wildlife Enhancement Bonus Program regarding its benefits to quail ?	1	2	3	4	5
8) How do you think the majority of participants in the program perceive the benefits regarding wildlife ?	1	2	3	4	5
9) How do you think the majority of participants in the program perceive the benefits regarding quail ?	1	2	3	4	5
10) What percentage of property owners do you think participate in the Wildlife Enhancement Bonus Program primarily for the monetary income versus providing wildlife habitat?					
_____ none					
_____ less than 10%					
_____ 11-25%					
_____ 26-50%					
_____ 51-75%					
_____ 76-100%					

11) Are there any other comments you would like to make regarding positive / negative aspects of the Wildlife Enhancement Bonus Program or thoughts to improve the program?

Return envelope is provided – postage paid. Thank you for your time and assistance!

Your input will help us improve wildlife habitat programs in Illinois.

THANKS FOR YOUR SUPPORT!



APPENDIX E

LANDOWNER / OPERATOR POST CARD REMINDER



SIU
SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE



Illinois Wildlife Enhancement Bonus Program

Dear Conservationist,

A few weeks ago you should have received a survey regarding the Illinois Wildlife Enhancement Bonus Program. In order to improve such conservation programs, we are requesting feedback based on your firsthand knowledge and expertise. Please take a couple of minutes to complete and return the survey in the postage paid envelope provided. If you have already returned your survey, please disregard and thank you!

If you would like another survey or have any questions, please contact Steve Hasstedt or Dr. Paul Brunkow in the SIUE Biological Sciences Department at (618) 650-2976.

Thanks for your time and assistance!

Southern Illinois University Edwardsville
College of Arts and Sciences
Department of Biological Sciences
Box 1651
Edwardsville, IL 62026-1651

Joe Habitat
555 Bobwhite Lane
Big Bluestem, IL 12345

APPENDIX F
LANDOWNER / OPERATOR
SECOND MAILING COVER LETTER



SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

Dear Conservationist,

A few weeks ago you should have received a survey regarding the Illinois Wildlife Enhancement Bonus Program. In order to improve such conservation programs, we are requesting feedback based on your firsthand knowledge and expertise. Please take a couple of minutes to complete and return the survey in the postage paid envelope provided. This is a voluntary survey sent out to all Wildlife Enhancement Bonus Program participants, and your responses are anonymous. If you have already returned your survey, please disregard and thank you!

The information you and other participants provide will be used to evaluate benefits and to identify possible improvements to this program for both participants and wildlife habitat. This study is part of a research project at Southern Illinois University Edwardsville, and results will be presented to both the IL DNR and IL Quail Unlimited.

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Thanks for your time and assistance!

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